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REPORT

ON

LEPROSY

BY THE

ROYAL COLLEGE OF PHYSICIANS,

PREPARED FOR

HER MAJESTY'S SECRETARY OF STATE FOR THE COLONIES;

WITH AN

APPENDIX.

LONDON:
PRINTED BY GEORGE EDWARD EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.
FOR HER MAJESTY'S STATIONERY OFFICE.

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REPORT.

The inquiry of which the result is comprised in the following report was instituted in consequence of the subjoined communication from the Under-Secretary of State for the Colonies :—

Sir, Downing Street, May 16, 1862.

I am directed by the Duke of Newcastle to transmit to you the copy of a Despatch from the Governor-in-Chief of the Windward Islands, suggesting that reports should be obtained from the Colonies, and collated by some professional body in this country, respecting the character and progress of the disease of leprosy, which he states to be on the increase in the Islands of his Government. His Grace is disposed to think that advantage would result from the adoption of Governor Walker's suggestion, and the extension of it to the West Indian Colonies at large; and should the College of Physicians see reason to concur in this view, he will be much obliged for any assistance which they may be enabled to afford him in order to the subject being put in a right train.

His Grace is of opinion that any body which shall consent to deal with the results of the proposed inquiry should frame the interrogatories.

Governor Walker's proposed mode of interrogation would seem to afford a basis to proceed upon.

I have, &c.,
Frederic Rogers.

The Secretary to the
College of Physicians.

My Lord Duke, Windward Islands, Barbados, February 19, 1862.

I have the honour to transmit to your Grace, for the signification of Her Majesty's pleasure, an Act which has been passed by the Legislature of Barbados, entitled "An "Act to increase the Salary of the Superintendent of the Public Lazaretto," with the usual Report thereon from the law officer.

2. The lazaretto is the asylum for persons afflicted with leprosy. I have called for a report upon the condition of this institution and of the unfortunate persons who are confined it, and will transmit it to your Grace as soon as it comes to hand.

3. I regret to state that this fearful malady is on the increase in these Colonies. Its loathsome character deprives it of all the private and much of the professional interest which is seldom wanting in other forms of disease, and may have in some measure reconciled people to the prevalent belief that it is incurable.

4. Hopeless as the case of the unhappy leper may be, I think that if reports could be obtained from all these Colonies of the character and progress of the disease; of the mode of treatment pursued in each, and of the success with which it may have been attended; of the dietaries observed; of the religious and other instruction afforded to the patients in places where any number of them are collected together, either under private or public superintendence; and of the general regulations which are ordered to be observed in all institutions for their reception, something might be gained, if not by having all the information thus obtained collated and submitted to the inspection and discussion of some professional body in England, at least by having it imparted to each of the Colonies for our study and guidance.

I have, &c.,
(Signed) Jas. Walker.

His Grace The Duke of Newcastle,
&c. &c. &c.

These letters having been read at a meeting of the College held 14th June 1862, it was resolved, on the motion of Dr. Alderson, seconded by Dr. Hawkins, "that a letter "be written in reply, stating that the College is willing to undertake to collate, digest, and "report upon whatever information respecting the disease of leprosy in the Islands under

" Governor Walker's government, or elsewhere, may be submitted to their consideration; " and that a Committee appointed by the College is prepared to frame the interrogatories, " if his Grace the Duke of Newcastle should so desire."

On the nomination of the President, the following fellows were appointed to form a Committee for the purpose, viz. :—Dr. Budd (Senior Censor), Dr. Owen Rees, Dr. A. Farre, Dr. Gull, Dr. Milroy, and Dr. Greenhow.

The following letter was received by the College from the Colonial Office, acknowledging the receipt of the above resolution :—

SIR, Downing Street, July 1, 1862.

I HAVE laid before the Duke of Newcastle your letter of the 21st ultimo, and I am directed by his Grace to state that he is much gratified to learn the willingness of the College to collate, digest, and report upon any information which may be collected in the Windward Islands, or elsewhere, respecting leprosy, and to frame a series of interrogatories with a view to its collection.

I am to add, that if the College will be good enough to furnish his Grace with those interrogatories, he will lose no time in instructing the Governors of the West Indian Colonies to obtain all the information in their power in reply to them.

His Grace is not aware whether there are any other of Her Majesty's Colonies besides those in the West Indies in which leprosy prevails extensively, and, if the College should possess the information, he would be glad to be apprised to which Colonies, if any, besides the West Indian, the interrogatories should be sent.

I have, &c.,

Henry A. Pitman, Esq., M.D., FREDERIC ROGERS.
&c. &c. &c.

In the first place, the Committee prepared the subjoined series of interrogatories which, having been approved by the College at their meeting on the 24th July 1862, were forwarded to the Colonial Office by the Registrar, accompanied with the following memorandum :—" As the disease is known to exist not only in many foreign countries, " but also in various British Colonies in the East and elsewhere, the Committee are of " opinion it is very desirable the interrogatories should be sent to all the Colonies " of the Empire."

1. Is leprosy known in the Colony of ? If so, be pleased briefly to describe it as it occurs there.

a. Are there several different forms or outward manifestations of leprosy? If so, by what names are they respectively known?

b. Are these several forms, in your opinion, only varieties of one common morbid state? or are they specifically distinct diseases, having no affinity with each other?

c. Please to enumerate succinctly the more obvious and distinguishing characters of each form of leprosy which you have seen.

2. At what age does the disease generally manifest itself, and what are usually the earliest symptoms observable?

3. At what period of life, and within what time, does the disease usually attain its full development? and at what period of life, and after what time, does it usually prove fatal?

4. Is the disease more frequent in one sex than in the other? If so, in what proportion?

5. Is it more frequent among certain races? among the white, the coloured, or the black population? and in what relative proportions?

6. In what condition of society is the disease of most frequent occurrence, and what are the circumstances which seem to favour its development in individuals, or in groups of individuals?

Please to enumerate these circumstances under the following heads :—

a. The characters of the place or district where the disease most frequently occurs in respect of its being urban or rural, on the seacoast or inland, low, damp, and malarial, or hilly and dry.

b. The sanitary condition of the dwellings, and of their immediate neighbourhood.

c. The habits of life, as to personal cleanliness or otherwise.

d. The ordinary diet and general way of living.

e. The occupation or employment.

7. What conditions or eireumstances of life seem to accelerate or aggravate the disease when it has onee manifested itself in an individual?

8. Does the disease appear often to be hereditary?

Have you known instanees where one member only of a family has been affeeted while all the other members remained free from any traee of it?

9. Have you reason to believe that leprosy is in any way dependent on, or connected with syphilis, yaws, or any other disease?

10. Have you met with instances of the disease appearing to be eontagious, in the ordinary sense of that term, *i.e.*, eommunieated to healthy persons by direct eontact with, or close proximity to, diseased persons?

a. If so, in what stage was the malady in the diseased person? Were there uleerations with a discharge?

b. Please to deseribe briefly the case or cases of contagious eommunication which you have seen yourself.

c. Does the disease seem to be transmissible by sexual intercourse?

11. Are persons affected with leprosy permitted in the eolony of to eommunieate freely with the rest of the eommunity? or is there any restriction imposed, or segregation enforeed, in respect of them?

12. What publie provision is made for the reception and treatment of the leprous poor?

Are they admitted into the general hospitals? or are there separate infirmaries or asylums provided for them?

Please to deseribe the structural and sanitary eondition of such buildings, and the arrangements made for the medieal and hygienic treatment of the sick in them.

13. Can you state the number of leprous persons maintained at the publie expense in the Colony of ?

14. Have you reason, from personal knowledge, to believe that the disease has been of late years,—say during the last 15 or 20 years,—on the increase in the Colony of or otherwise?

And if so, please to state what in your opinion may have contributed to its increase or its diminution.

15. What results have you observed from the hygienie, the dietetie, or the medieinal treatment of the disease? Does leprosy ever undergo a spontaneous cure? and if so, at what stage of the disease?

Are you aware what proportion of the leprous poor treated at the public expense in the Colony of reeover wholly or partially?

16. What is the estimated population of the Colony of ? and when was the last census taken?

Is there a general and uniform registration of births and deaths, including the causes of death? and if so, how long has such a registration existed?

17. Can you state the name of the townships or distriets in which leprosy prevails most, and give the number of lepers and the population in eaeh of sueh townships or distriets?

Please to add any other observations whieh you believe may serve to throw light upon the predisponent or exciting eauses of the disease, or whieh may bear on its prevention, mitigation, or cure.

Any documents, printed or not, descriptive of the disease, as it has been observed at any time in the Colony of with any reports of post-mortem examinations, or any pictorial illustrations, will be aeceptable; also eopies of the annual Registration Returns, and of other works bearing on the vital statistics of the Colony.

In aecordanee with the suggestion of the College that the inquiry should be extended to the British possessions in India, and also to various foreign eountries, the Duke of Neweastle brought the subjeet under the notiee of Earl Russell, the Seeretary of State for Foreign Affairs, and of Sir Charles Wood, the Seeretary of State for India, with a request that the interrogatories should be forwarded to Her Majesty's Consuls in the East, and to the authorities in India and its dependeneies.

The first paeket of replies to the interrogatories was received in April 1863, accompanied with the following letter from Sir Frederic Rogers:

Sir, Downing-street, April 14, 1863.

I am direeted by the Duke of Newcastle to request that you will submit to the College of Physicians the enelosed returns respeeting leprosy whieh have been received from Governors of Colonies and British Consuls abroad in reply to the interrogatories founded upon your communication of the 9th August last.

These returns are in original, and Earl Russell has requested that those of them that have been received from the Consuls may be returned to the Foreign Office when done with.

I am to annex a schedule of the whole of the documents which accompany this letter.

In your communication received the 21st of June 1862, the College of Physicians were good enough to intimate their willingness to collate, digest, and report upon any information which might result from the interrogatories.

The Duke of Newcastle observes that, in respect to the treatment of lepers, there arise questions other than medical, and yet depending much on medical and physiological data,—questions, namely, respecting laws and regulations for the restraint or seclusion of lepers founded on the popular notion of the disease being contagious, and partly it would appear, in some cases, on the notion that, being transmissible from parent to child, and in these times rarely otherwise generated, the propagation of it should be, as much as possible, prevented by separation of the sexes.

His Grace would be greatly obliged to the College of Physicians for any guidance which they may be enabled to give him on these and other points relating to the treatment of lepers.

With reference to the return from Jamaica, I am to annex a copy of a Despatch* which his Grace has addressed to the Lieutenant-Governor of that Colony, calling his attention to the representation made by Dr. Fiddes of the state of the asylum for leprous paupers provided by the Corporation of Kingston.

I am, &c.,

Dr. Pitman. FREDERIC ROGERS.

In reply to the above letter, and also to the letter from Mr. Fortescue, Under Secretary of State, of May 21, 1863†, forwarding a copy of a Despatch from the Lieut.-Governor of New Brunswick‡, the following memorandum prepared by the Committee, and approved by the College, was sent:—

"The Committee having had their attention drawn to the concluding paragraph in "Mr. Fortescue's letter of May 21, 1863, to Dr. Pitman, relative to the question of the "contagiousness, or otherwise, of leprosy, and also to the Despatch of the Governor of "New Brunswick of April 13, 1863, to the Duke of Newcastle, find, on examination of "the replies which they have up to this date received, and which amount to fifty in "number, that a very large majority of the reporters consider the disease to be not "contagious or communicable to healthy persons by proximity or contact with the "diseased. The replies already received contain no evidence that, in the opinion of the "Committee, would justify any measures for the compulsory segregation of lepers."

The question as to the contagiousness of leprosy was again brought under the attention of the Committee by a Despatch from the Duke of Newcastle to the Governor of Trinidad,§ and by the subjoined letter from Mr. Fortescue to the College:—

SIR, Downing Street, 9th July 1863.

I AM directed by the Duke of Newcastle to acknowledge the receipt of your letter of the 19th ultimo, sending a copy of a report of the Committee appointed by the Royal College of Physicians to frame interrogatories with a view to obtain information on the subject of leprosy.

His Grace desires me to inform you that he contemplates sending out a circular to the Governors of all Her Majesty's Colonies, expressing an opinion that any laws affecting the personal liberty of lepers ought to be repealed; and that in the meantime, or, if they shall not be repealed, any action of the Executive Authority in enforcement of them, which is merely authorized and not enjoined by the law, ought to cease. The effect of that circular would, his Grace thinks, be much enhanced if it were accompanied by an authoritative statement from the Committee, exhibiting, as forcibly as possible, the full weight of the evidence which has been obtained, down to this time, as to the contagiousness of leprosy, and the conclusions which the Committee have drawn therefrom.

Having reference to the importance of this matter, his Grace feels that he may request the Committee to be so good as to furnish him with such a statement, when this part of the case is complete, in anticipation of their general report.

I am, &c.,

Dr. Pitman. C. FORTESCUE.

P.S. I am desired to annex copy of a further Despatch which has reached this department on the subject.

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* Vide Appendix, p. 205. † Vide Appendix, p. 204. ‡ Vide Appendix, p. 203.
§ Vide Appendix, p. 207.

The following reply was prepared by the Committee, and, after being submitted to the College at their meeting on the 20th July, was sent to the Colonial Office:—

"The Committee having had referred to them the letter of Mr. Fortescue of July 9th " to Dr. Pitman, the Registrar, conveying the wish of the Duke of Newcastle to be " furnished with a statement from the Committee, exhibiting, as forcibly as possible, the " full weight of the evidence which has been obtained down to this time as to the " contagiousness of leprosy, and the conclusions which the Committee have drawn " therefrom, beg leave to report that,—

"1. The number of replies hitherto received through the Colonial and Foreign Offices " amounts to 62. These returns have come from many of the West India Colonies, and " also from New Brunswick, from the Ionian Islands, and several places in the Turkish " Empire; from Sierra Leone, Tunis, and Cairo; and from Tabreez, Ceylon, Hong " Kong, China, and Kanawaha. Besides these official returns, four replies have been " received from medical gentlemen now residing in this country, but who have seen the " disease in different countries abroad.

"2. In 45 of the replies a decided opinion is expressed that leprosy is not contagious. " Only a few of the reporters, however, give any facts in support of this opinion.

"3. In nine of the replies an opinion is expressed that the disease is contagious, but " no satisfactory evidence is adduced in favour of this view.

"4. In the remaining 12 replies, either no opinion is expressed on the subject of " contagion, or the statements made are quite indefinite.

"5. The Committee having carefully considered the replies already received, are of " opinion that the weight and value of the evidence they furnish is very greatly in " favour of the non-contagiousness of leprosy.

"6. The Committee, therefore, can only repeat the statement made in their former " report to the College, that the replies already received contain no evidence which in " their opinion justifies any measures for the compulsory segregation of lepers."

As the replies to the interrogatories were received from the Colonial Office, full abstracts of them were prepared, it being considered that to print all the answers without exception *in extenso* would have been unprofitable, and have swelled the documentary evidence to a needless and inconvenient bulk. The last returns which came to hand were those from the Bengal Presidency in the spring of 1865.

Upwards of 250 replies to the interrogatories have been received from medical men in different parts of the world, (more than one-half have come from India), exclusive of those from Her Majesty's Consuls and of communications from the Governors of British Colonies.

After much consideration, the Committee deemed it best to frame their report upon the voluminous evidence submitted to them in sections corresponding with the interrogatories, —presenting, in the first place, an arranged selection of the replies under the successive interrogatories, and then giving in like succession the Conclusions they have formed on the subject-matter of each interrogatory from a review of the whole evidence before them.

In foot notes appended to most of the conclusions, the leading results of the observations of MM. Danielssen and Boeck on the several questions discussed are given, from the Norwegian Official Report on Leprosy in 1847. This valuable report was translated by order of the Norwegian Government, and published under the title of *Traité de la Spédalskhed ou Eléphantiasis des Grecs.* Paris, 1848.

In the closing observations of the Report, several topics relating to the inquiry which could not be conveniently dealt with before are submitted for consideration.

1.

1. Is leprosy known in the colony of ? If so, be pleased briefly to describe it as it occurs there.

a. Are there several different forms or outward manifestations of leprosy? If so, by what names are they respectively known?

b. Are these several forms, in your opinion, only varieties of one common morbid state? or are they specifically distinct diseases, having no affinity with each other?

c. Please to enumerate succinctly the more obvious and distinguishing characters of each form of leprosy which you have seen.

The only province or division of *British North America* where the disease has been reported to us as being known is that of *New Brunswick*, and there it appears to be limited to a small part of the province, and to be of comparatively recent origin.

The disease was first observed among the French settlers in Tracadie, a district in the county of Gloucester, bordering the bay of Chaleurs in the gulf of the St. Lawrence, and it is still almost exclusively limited to this and to one or two adjacent districts on the north side of the Miramichi river. It is believed to have been introduced into the province by an emigrant family from St. Malo in Normandy.*

The following is the account given by Dr. Nicholson, the resident medical officer of the lazaretto at Tracadie:—

"Leprosy has been known in New Brunswick since 1815. How or by what means it was introduced into the country is unknown. There are two forms of this disease here; the *tubercular*, and the *anæsthetic* or non-tubercular. I hold them to be varieties of one common state. The *tubercular* form is characterised by the appearance of yellowish or dark red spots or patches on the skin, usually at first on the head, chest, arms, and legs, and from half an inch to four inches in diameter. Tubercles of different sizes form on various parts of the body, chiefly on the face, eyebrows, nose, or ears. Some of them subside, leaving a whitish cicatrix, much thinner than the surrounding yellowish or dark red skin; others ulcerate, and give rise to ill-conditioned sores. The ears become much thickened with elongation of the helix, The hair falls off from the eyebrows, and afterwards from other parts of the body. The mucous membrane of the mouth, fauces, &c. becomes ulcerated and tuberculous, causing great difficulty of breathing, with excessive fœtor of the breath. There is more or less insensibility of the skin of the affected parts; but this symptom is not so marked as in the next form of the disease, the *anæsthetic*, in which discoloured spots appear as in the first form, but, in place of tubercles, bullæ or vesicles form, which burst, ulcerate, and heal up, to be followed by fresh crops, which then follow a similar course, perhaps for years. The phalanges of the fingers and toes drop off, followed by great distortion. The anæsthesia is sometimes so great that I have known one of the patients in the hospital burn her hand and arm severely at the stove without being aware of the injury till told of it by one of the inmates. The insensibility affects the mucous surface of the mouth, fauces, &c. The sense of smell is lost."

Bermuda.—Under the term of leprosy, Dr. Hinson describes, besides the tubercular form of the disease, the elephantine enlargement of the lower extremities, known as "Barbadoes leg." He regards them, however, as specifically distinct diseases. The latter malady, popularly called in the colony the "rose," is described as being "sometimes the result of an "acute attack of erysipelas, but usually it is more insidious in its approaches, commencing "with an œdematous swelling of the ankle, which spreads up the leg. After it has existed "for a time, it is only inconvenient from the deformity it occasions."

Leprosy prevails to a greater or less extent in all the British West Indian colonies. The two forms of the disease, known as the *tubercular* and the *anæsthetic*, are very generally

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* Dr. Chipman of Nassau, Bahamas, conjectures that the disease may have been imported by immigrants from the French West India Colonies. "There are," he says, "in New Brunswick and Canada, many persons "who are the offspring of inhabitants of Guadaloupe and Martinique, who, in times gone by, emigrated to "Canada, and spread thence to the adjacent provinces."

recognised; they are usually regarded as only varieties of one morbid condition. They occasionally coexist or are blended together in the same individual. The names by which they are popularly known are "leprosy" and "joint-evil" or "coco-bay," a term, it is supposed, of African origin. In the *Bahamas* the term "black scurvy" is sometimes applied to the (tubercular?) disease. Dr. Checkley, of *St. Vincent*, applies the epithets of "humid" and "dry" to the "tubercular" and the "anæsthetic" forms. In *Barbadoes*, persons affected with any form of leprosy are said to be "afflicted."

Jamaica.—In this island, where the disease has been long known, and where it prevails extensively, a good deal of attention has, of recent years, been paid to it by several of the resident medical men, and especially by Dr. Fiddes, of Kingston, who published a valuable paper on the subject a few years ago,* and by Dr. Bowerbank, of the same city, who thus describes the malady as seen there, beginning with the *tubercular* form:—

"The spots, at first mere stains, become raised, often presenting a smooth, swollen, and polished aspect, and acquire a darker hue. Afterwards they lose the polished look, and become rough and tuberculated. The patches and tubercles ultimately ulcerate, forming oval sores of a whitish sluggish look, exuding a glairy discharge. I have seen the whole surface of the body covered with these ulcers, so that there was scarcely an inch of healthy skin. When any of the ulcers heal, they leave white shrivelled cicatrices. There is no particular part of the body on which the disease first appears. As it advances, the eyebrows, nose, cheeks, lips, chin, ears, the hands and fingers, toes, the fauces and trachæa are chiefly affected, causing frightful disfigurement, &c., with the hoarse nasal voice so characteristic of tubercular leprosy. Necrosis of the nasal and palate bones occurs at a late stage.

"From the very first appearance of the spots on the skin, the sensibility of the affected parts is found to be diminished, and this symptom becomes more marked with the advance of the disease. I have often excised large tubercles from the face and hands, which, though they bled freely, did not cause the least pain to the patient. Lepers often inflict upon themselves severe burns in cooking their food, &c., without being aware of it.

"In *anæsthetic* leprosy there is also a premonitory stage, indicated by pains shooting along the limbs in the course of the larger nerves, and affecting the use of certain fingers and toes, or of a hand and a foot; not mere numbness, but positive loss of power, along with loss of sensation. The muscles of the affected limb become atrophied, and the whole limb diminishes in size. The fingers and toes become contracted, and flexed on the palms and soles, and gradually become permanently fixed in this position. When stains or discoloured spots appear on the surface, they are usually much larger than in the tubercular form, and are often of a gyrate shape, extending over a whole limb, or a great portion of the trunk. Often the ulnar or the musculo-spiral nerve may be felt in its superficial course to be much larger than natural. The ulceration and subsequent destruction of the fingers and toes are usually preceded by the formation of large vesicles or bullæ which burst, discharge a glairy fluid, and become covered with a crust or scab on the affected part. At this stage the disease may be arrested for years, the patient enjoying very good health, and merely crippled by the loss of his fingers and toes; or a general wasting of the whole body may occur, with paralysis, more or less complete, of the nerves of the face and the upper portion of the cerebro-spinal system. In these cases there is no deformity or destruction of tissues, as in the tubercular disease; no ulceration about the nose, palate, or throat, &c.; but the sufferer is dejected in mind and apathetic."

The patches of discolouration in the anæsthetic form of the disease resemble, Dr. Nicholson, of *Antigua*, remarks, those of "*pityriasis versicolor* on various parts of the body, in which "sensibility is nearly lost." The same gentleman also mentions that in the tubercular form, "the skin of the buttock shews large discoloured patches resembling *psoriasis*."

Tumefaction of the extremities is enumerated by Dr. Augustin, of *Nevis*, as one of the symptoms in the advanced stages of tubercular leprosy:—"The cellular tissue of the upper "and lower extremities becomes engorged, the skin is shining and wrinkled, especially on "the back of the hands and feet, while the soles of the feet swell considerably and develop "flat tubercles. The tubercles on the fingers and toes frequently suppurate and ulcerate."

Barbadoes.—From none of our West India colonies has more ample and exact information been obtained than from this island. Eight of the resident medical men have communicated the results of their observation. The two forms of leprosy, the tuberculous and the anæsthetic, as well as the disease known as the "Barbadoes leg" or "glandular disease of Barbadoes," [sometimes popularly called "fever and ague"], have long been known and are common in the island. Dr. Browne, physician to the lazaretto, in his description of anæsthetic leprosy, observes:—"It commences with white spots on the skin of the body, hips, and arms, subsequently

* *Edinburgh Medical Journal*, June 1857.

numbness and loss of feeling in the extremities, followed by gradual contraction of the flexor tendons, and afterwards by loss of the phalanges of the fingers and toes, and occasionally of the entire hands, and of the greater portion of the feet, by absorption, without ulceration, the nails and toes being often found on the knuckles or remaining stumps. The gait of the patient is often peculiar; he lifts his knee high, and drops the foot flatly in progression.

"Cases occur partaking of the characters of both forms of the disease, such as contraction of a finger or two, with numbness in the tuberculous form, and slight tumefaction of the lips, &c., in the anæsthetic form. Of 45 patients in the lazaretto, 26 present the tubercular form, and 19 the anæsthetic."

The tuberculous form of the disease is thus described by Dr. Young:—"It is characterised by a dusky black or dirty yellow complexion in the negro and mulatto, as if the skin was covered with a thin film of dirt, and by a livid or dirty brown or red colour in the white. The skin of the forehead, particularly of the eyebrows, and of the cheek bones, alæ nasi, lips, chin, and ears, are tuberculated and shining, as if covered with varnish, and the lobes are pendulous. The lips are swollen and everted, partially showing the teeth, and frequently fissured and sore. The hair of the scalp is thin and lank, and the beard is scanty or wanting; the hair on the axillæ, on the pubes, &c., is also deficient. The mucous membranes of the mouth, fauces, pharynx, larynx, and nasal passages, and covering the tongue and uvula, are studded with tubercles; the pituitary membrane discharges a fœtid secretion, and the sense of smell is impaired; the whole causing a frightful deformity of countenance. There is a general wasting of the muscular system, and nowhere any visible fatness. The skin of the body, arms, and thighs is meagre and loose, of a dusky, dirty, or livid yellow or red colour, and spotted about with patches of *vitiligo*, particularly on the nates, arms, and legs (that on the nates being tuberculated). These blotches are mostly insensible to the touch, or have an indistinct feeling of soreness accompanied with numbness, when pinched between the finger and thumb. From about midway of the legs to the phalanges of the toes, there is serous infiltration of the cellular tissue of the parts, and the ends of the toes are livid and rather atrophied, the skin of the feet and legs is chapped, and discharges an offensive ichor. The backs of the hands and fingers are swollen, and the fingers stiff and painful on being bent. The inguinal glands are enlarged, and the skin covering them pendulous. The genital organs are either not properly developed, or become atrophied, according as the disease began before or after puberty, and the sexual desire either never existed, or is lost when the disease is fully developed, nor do I know of procreation having taken place in any such state of the body and constitution."

Dr. Clarke remarks that, in his experience, the tuberculous and the anæsthetic forms of the disease have been almost always combined, "the anæsthesia or loss of sensation being "very often the early and prominent symptom."

Dr. Goding describes a rare variety of the tuberculous form, "distinguished by the "(cutaneous) tumefactions not being so much raised as usual, and by the formation of a "thin scaly desquamation on the surface of tubercles." In another variety, "the tubercles "on the face are covered with thick incrustations or scales, produced by the ulcerated "surfaces of the tubercles beneath."

Guiana.—Leprosy prevails in many regions of *South America*. For several years past it has excited much attention in British *Guiana*, where it is very common. Dr. Reed, the medical officer of the General Leper Asylum, thus describes the "joint evil," and the tuberculous leprosy, as they are seen in that colony:—

"The *first* form begins with exacerbations of fever, and pains about the body for some weeks, and then the appearance of white or copper-coloured spots, sometimes on the face, but always on the limbs and body. They are slightly anæsthetic, and sometimes, after various intervals of time, fade, and become scarcely perceptible. In other cases, a dark red spot, in white and fair persons, often appears on either cheek; numbness of the fingers and toes then ensues, and the little and ring fingers begin to flex or contort. The first joint of the fingers and toes ulcerates underneath the nail, which either separates with the phalanx, or remains and assumes the shape of an imperfect claw. Gradually ulceration and mortification attack the different phalanges, which drop off joint after joint, while ulcers form on the legs, soles, and palms. In this form of leprosy the face and features remain natural, nor does the hair drop off or change its colour.

"In the *second* form, the discoloured spots or patches appear always on the face, and on various parts of the body; they are usually copper-coloured in the white, and yellowish brown in the black. These spots become tuberculous, and have a firm, dense, and glossy appearance. The skin over all the body becomes insensitive, dry, shrivelled, and thickened. The skin of the forehead is in large folds; the eyebrows and eyelids, deprived of hair and thickened, overhang the eyes, which are waterish, and often inflamed. The alæ nasi and the ears are swollen and scabrous, and the features altogether horribly disfigured. The tongue, uvula,

and palate may become the seat of tubercles, and the voice rough, discordant, and very indistinct, doubtless from disease of the larynx. The fingers and toes tumefy about their joints, become numb, so that they are often burnt in cooking. In some cases, however, the fingers and toes ulcerate and drop off, joint after joint. The chief distinction between the two forms of the disease is that, while the face may remain unaffected throughout the course of the former, it is invariably swollen, tuberculous, and deformed in the latter."

Dr. Van Holst states that leprosy is frequent in *Dutch Guiana* also. "Seven degrees of "disease are there recognised; but they are all considered varieties of one common morbid "state"

The replies received from *Honduras* and from the *Turk's Islands* (annexed to the Government of *Jamaica*) state that leprosy is unknown in these dependencies.

Passing from the New World to the Old, and beginning with the southern extremity of the African continent, we find that leprosy appears to have been long known as common among the natives at the *Cape of Good Hope, &c.*

As described by Dr. Abercrombie, who has practised for more than 40 years in that colony, the symptoms exactly correspond with those already given by the physicians in the West Indies:—"There are two forms, the tubercular and the anæsthetic. In the former the "disease commences with tubercles, accompanied with discolouration of the skin, and more "or less insensibility to the touch, usually on the cheeks, forehead, alæ nasi, and lobes of "the ears, causing as they increase great deformity; also hoarseness, ozæna, and symptoms "indicative of disease in the air tubes and lungs. In the second form, the fore-arms and "hands and legs and feet are first affected with swelling and insensibility. Vesications "appear over or immediately under the metacarpal or metatarsal bones, or the phalanges of "the fingers and toes. These burst, ulcers form, and extend deeper and deeper until the "joint drops off. This process is repeated again and again with the same result. The "strength of the patient becomes undermined, and he dies usually from bowel disease.

"These two forms I consider as quite distinct, although they occasionally occur in the "same patient, the one form supervening upon the other, and the hereditarily predisposed "may be attacked with either."

Leprosy is stated not to have been seen in *Natal*.

At *Sierra Leone*, the tubercular form of the disease appears to be that which has been hitherto most commonly recognised.

The information received from *Tangiers*, *Tunis*, and other places on the northern coast of *Africa*, is too vague and meagre to warrant any conclusions therefrom. True leprosy is stated not to be known in and around the districts of *Tripoli* and *Bengazi;* but further and more exact inquiries on this head are doubtless necessary. In the consular district of *Cairo*, both forms of the disease, the tubercular and the anæsthetic, are said by Consul Drummond Hay to exist. He mentions "white shining patches with hard base, in various degrees of "ulceration," among the marks on the surface.

Palestine and Syria.—A full and accurate account of the disease as it still occurs in these countries, with which its past history is so intimately associated, is much needed.

It will be seen from the following remarks by Mr. Rogers, consul at *Damascus*, that the two forms of the disease recognised in that district are—"1. Baras el Israîly, or Israelitish leprosy, which consists of whitish scales on the skin; and 2. Jezâm, or, Da el Ased, or the lion-like disease, so called from the fierce appearance of people suffering from it; the lips, nose, lower jaw, and eye-lids swollen, and rounded eyes.

"The first of these two kinds is very rare. I have never seen a case of it, but have heard of two.

"The other kind is quite distinct from it, and may, on more careful and scientific investigation, be found to consist of varieties which have not been particularized hitherto.

"The usual characteristics of the first kind are, the formation of scales over the skin, which peel off like bran or small fish scales, with pains in the limbs, but no ulcerations.

"In the other kind, the nose and upper lip become swollen and shiny; ulcerations form on the face; the hair of the face and head falls off; the voice becomes hoarse; the skin of the face becomes hard, lumpy, and wrinkled; and great pain is felt in the limbs. The nose is gradually eaten away, and sometimes the lips also; the hands and feet next swell; the nails of the fingers and toes ulcerate and fall off; and in some cases not only the fingers and toes, but even the hands and feet, as far as to the wrists and ankles, are eaten away; and sometimes, though rarely, ulcers are formed on other parts of the body."

Mr. Rogers describes shortly two cases which he had recently seen, and in which the chief symptoms were lupoid ulceration of the nose, with hoarseness of the voice. In one case, "the hands and wrists are swollen, aud there is a constant suppuration from the nails, some

" of which have fallen off." In the other case, " nearly all his fingers are gone; his toes " are going by degrees; suppuration continues in both hands and feet."

That both the " tubercular " and the " vesicular " or " anæsthetic " forms of the leprosy are known in the district of *Aleppo* is manifest from the account of Mr. Wortabet, transmitted by Consul Skene.

It is stated that the disease is not met with at *Alexandretta* or at *Latakia*.

In most of the islands in the Archipelago, leprosy is more or less extensively prevalent. In the large island of *Cyprus* (which is included in the consular district of *Beyrout*), it is much more common, according to the statement of Consul-Goneral Moore, than in the opposite mainland of Syria.

At *Rhodes*, and probably elsewhere, many simple cutaneous diseases occurring in unhealthy constitutions are confounded with the true leprosy, so that persons affected with inveterate psoriasis, syphilitic eruptions, &c., " are often condemned as lepers."

At *Scio*, where the disease has existed from time immemorial, the tubercular and anæsthetic forms are described under the epithets of " humid " and " dry." It would seem that the malady has of recent years been less frequent on the adjacent mainland of Asia Minor, around Smyrna, than formerly.

At *Mytilene*, to the north, and at *Samos*, to the south of *Scio*, it is endemic and well known. The attention of the Imperial Medical Society of Constantinople having recently been drawn to the prevalence of leprosy in the Ottoman dominions, several valuable communications on the subject have been read at their meetings, and afterwards appeared in the Gazette Medicale d'Orient. Among these is one from Dr. Mengozzi, detailing the results of his observations in *Samos*, where the disease is extensively prevalent. He there states :—

Samos.—" I have seen 80 cases of the disease. In one-fourth, or more, of these cases there was no development of tubercles in the skin or elsewhere, but only, or chiefly, the mutilation of the extremities, associated with more or less extensive and complete anæsthesia. The loss of sensation is not, however, limited to this form of leprosy, as it is present in the tubercular form also; this symptom may indeed be considered as characteristic of leprosy in general. I would call it, after the example of Dr. Hjorth of Crete, the " articular " form of the disease, if I was satisfied that the flexion of the phalanges was the effect of an articular lesion, and not rather, as I believe, of the shrinking and hardening of the flexor muscles and tendons. The appellation of " diérétic " leprosy might best express its most notable feature, viz., the separation or falling off of the members. In all the cases of leprosy, whether tubercular or not, which I have seen, there were two symptoms invariably present, viz., anæsthesia and a sense of inward heat or burning. The insensibility of parts is sometimes such that they may be burnt or cut without the patient being aware of it. From the distressing feeling of inward heat, there is generally a great craving for cool drinks, &c. I regard the different forms as having a common origin."

In *Crete* also, where leprosy has been endemic for centuries, it has recently been engaging the attention of several medical inquirers. Dr. Brunelli is at present investigating the disease upon the spot, and Drs. Hjorth and Mongeri, both former sanitary physicians of the island, have written upon it. In the following extract from the description by the last-named gentleman, notwithstanding the undetermined meaning of certain technical terms applied to diseases, allusion is also made, as in Mr. Rogers' communication from Damascus, to the leprosy of the Jews, and it is regarded as one of the forms of true tubercular leprosy : —

Crete.—" Leprosy is called in the Turkish language djudam or meskin; by the Cretans khalassi or komagra, and lepers khalasmeni, komeni (gatés, coupés). The principal forms seen in Crete may be classed in three groups. 1. The knotty, tuberculous or elephantine, the leprosy of the Arabians; 2. The squamous, or leprosy of the Greeks; and 3. The white, tzarath or leprosy of the Jews. These forms are, however, often blended and combined in one patient, so that it is difficult to dissociate them. The earliest symptom is generally some alteration in the integuments of the face, accompanied at first in some cases with an excessive sensibility or hyperæsthesia, to be afterwards followed by a more or less complete anæsthesia. Swelling and ulceration of the nasal passages and of the lips, with tuberculous enlargement of the selerotic and cornea, as well as of the eyelids, ensue, causing much disfigurement and distress. At the same time, or previously, the extremities are usually the seat of divers morbid changes of structure, with disordered or impaired sensibility, and ultimately of ulceration and loss of the phalanges of the fingers and toes, &c. In some patients, the disease appears chiefly in the form of excessive tumefaction of the extremities, or of scattered nodosities or hypertrophic hardenings of the integuments of the body. The 'bouton de Crete,' analogous to the 'bouton d'Alep,' is one of the manifestations of leprous disease. The cerebral and organic functions are usually unaffected."

But it is not to the Turkish and Greek islands of the Mediterranean that leprosy is confined, as appears from the following communication from *Corfu*, where, although for so many years under British government, its existence has hitherto scarcely been known:—

"Tubercular leprosy has long existed in the Ionian islands. Dr. Dellaporta described it at the end of last century as he saw it in Cephalonia. I have seen it," says Dr. Tygaldos, "at Faraclata and Erisso, in Cephalonia; at Karussades, St. Duli, and Leptimo, in Corfu; and also in Zante. It is known under the name of Λέπρα. During the 15 years I have practised in the Ionian islands, I have at all times met with cases of the disease.

"At first the patients exhibit, especially on the face and the extremities, smooth, shining, and oily-looking spots, of a yellowish colour, verging to a brown or livid hue. The affected parts, sometimes sensible, at other times insensible, or with an exaggerated sensibility, are swollen as if œdematous, and there is loss of the hair.

"These spots are succeeded by tubercles of various sizes, at first solid, and afterwards of a pasty or soft consistence, with a reddish livid aspect. As the disease advances, the tubercles attack other parts of the body, as the pharynx, larynx, nasal fossæ, &c.

"As a variety of the disease, I have noted in a patient in the village of St. Duli in Corfu the oily, yellowish, insensible spots, on which bullæ, containing a fœtid sanies, had formed. Destructive spreading ulcerations had followed upon the bullæ, but without the formation of any tubercles on the skin."

This latter form was clearly the anæsthetic form of the disease.

The elephantine enlargement of the lower extremities, known in the West Indies as the "Barbadoes leg," is also met with in Corfu.

The only locality on the mainland of Turkey in Europe, from which we have received any account of the existence of leprosy, is the district of *Salonica*, on the sea coast of which, and of the adjacent provinces of Thessaly and Macedonia, it is said to be endemic.

It is stated to be unknown in *Monastir* and *Jannina*, also in *Servia*, and in *Wallachia*.

In and around *Constantinople*, the disease is seldom met with. Dr. De Castro regards, it will be observed, the Mosaic leprosy as identical with the tubercular form of the disease:—

"With the exception of the cases in the leper asylum at Scutari, the 'tzaraath,'* or leprosy of the Old Testament, (which Dr. De Castro considers to have been the disease now described as Greek elephantiasis,) is very rarely seen in this city. It is called by the Turks 'miskine,' by the Arabians 'djouzam.' It always commences by general or partial anæsthesia of the skin, and by copper-coloured spots on various parts of the surface, especially the face. These spots subsequently become discoloured tubercles. There is generally hoarseness of the voice and falling off of the hair. The tubercles afterwards ulcerate, destroy the tissues, and cause mutilations of the extremities. In some cases the anæsthesia is the only symptom present. The tubercular and anæsthetic forms are only varieties of one disease. The first is the most common."

Most of the lepers in the asylum at *Scutari* come from the Asiatic coasts of the Black Sea, and the few cases of the disease that are ever seen in Constantinople are said to be chiefly among persons from the islands of the Archipelago. Dr. De Castro has met with several instances of tubercular leprosy among the Jews resident in the Turkish metropolis.

In the adjacent province of *Brussa*, in Asia Minor, leprosy appears to have of recent years disappeared; and Consul Barker states that only isolated cases are met with in the district of *Samsoun*, near *Sinope*, on the southern shores of the Black Sea, or in the towns of Asia Minor generally. It is stated to be unknown in *Trebizond*.

Passing on from the Turkish dominions eastwards, the communication from Dr. Cormick, long resident in Persia, to Mr. Abbott, our Consul at *Tabreez*, shows that the tubercular leprosy† prevails in the north-western province of the kingdom‡. "The disease," he remarks, "sets in with great languor and depression, followed by numbness and formication in the "extremities. The spots and tubercles then make their appearance on every part of the face, "but especially the nose and ears; they are soft, round, reddish or livid. Subsequently they "appear on other parts of the body. The face is puffed, the eye-brows and lashes fall off, "the forehead is beset with tubercles, the lips become thick and shining, and the lobe and "alæ of the nose much altered. After some years these tubercles inflame and suppurate, and "discharge a sanious pus, that dries up and forms adhering black or brownish scales. The "mouth, uvula, pharynx, and nasal fossæ are also attacked with tubercles; the pituitary mem-"brane becomes inflamed, and secretes a purulent fluid, and ultimately the cartilage and

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* Λεπρα of the Septuagint.

† "Jezam" in Persian.

‡ It is more than probable that the disease is common in many other districts of Persia besides the province of Azerbaijan.

" bones of the nose exfoliate. The voice becomes hoarse, nasal, and is finally lost. The " sense of smell becomes impaired and ultimately lost.

" The disease after long continuance very frequently causes the loss of toes and fingers, and " even of the hands."

China.—Tubercular leprosy prevails extensively throughout the Chinese empire, and especially in the southern provinces. It is known by the names of " fat-fung," " ta-ma-fung," " mo-fung," or the " great leprosy," to distinguish it from other chronic cutaneous diseases, which are, however, often confounded with it, so that the general term of " leprosy " is often very vaguely applied throughout the country. In and around *Canton*, and in the adjacent districts, it is very common. At *Shanghae* also, and in the vicinity, it is of frequent occurence. Very few cases are seen at *Hong-Kong*, but large numbers at *Macao*, to which island the lepers from the mainland flock in consequence of the kind treatment they receive from the Portuguese authorities there.

Among the symptoms mentioned by a native leper physician to Consul Robertson of Canton, is enumerated a " scaly brightness of the skin." The description given by Dr. Henderson of the disease as it is seen at *Shanghae* will apply to it in other parts of the empire :—

" It commences with one or more dusky-reddish shining patches on the forehead, nose, or legs; the skin seems tense, and has the look of being varnished; patients sometimes complain of weakness and languor; the appetite seems impaired; the tongue slightly furred; sensibility of affected part at first increased, but after from one to three months diminished. In the course of a short time, soft, livid, slightly prominent, indolent tubercles appear and spread over different parts of the body. Indolent, slowly corroding ulcers appear on the lower extremities; the skin becomes thickened and hard. After some months the whole skin presents a full and puffy appearance; the lips seem much thickened; the nose flattened; the nostrils dilated; the teeth become loose; the gums tender and ulcerated. The expression is peculiar, and the senses appear more or less blunted. The general health suffers little, and patients ordinarily continue their employments, unless very laborious, throughout the progress of the disease.

" In the third stage of disease, parts of the face, neck, and arms are ulcerated; the lower eye-lids are everted; the bridge of the nose is broken down; the palate is destroyed; the fingers and toes drop off, and the whole body appears a mass of corruption."

Japan.—Respecting Japan, all that can be said is that leprosy is believed to exist among the inhabitants; but no exact information on the subject has yet been obtained. The same may be said of the large Chinese island of *Formosa.*

Australia.—The Chinese have carried the loathsome disease with them into one, if not more, of our Australian colonies. Dr. M'Crea, the chief medical officer of the Government at *Melbourne*, states that it is chiefly in the gold districts in and around *Ballarat*, *Castlemaine*, and *Beechworth* that cases of tubercular leprosy have been met with among the immigrants. That the malady once developed in the constitution has continued its destructive progress in the climate of Australia is shown by the following account of the patients treated by Mr. Hutchinson at *Castlemaine* :—

" In all the cases seen the disease was matured, and though the symptoms varied in different cases, they were so unmistakeable as to be easily recognised. In all, the sensibility of the skin was more or less impaired. In some, the nose, larynx, and air passages became seriously involved as the disease advanced, and death seemed to take place by suffocation and exhaustion, while one or more attacks of pneumonia not unfrequently took place before the fatal result. In another class of cases, the disease seemed to develop itself more especially in the bones and joints of the phalanges of the fingers and toes; there were fistulous openings leading down to the diseased parts, and the bones became absorbed, so that one or even two phalanges sometimes were wanting; the soft parts contracted, leaving the fingers stumpy-like and short, but having the nail, and otherwise looking entire. In one case, where the disease had existed seven or eight years at least, one of the ankle joints was completely dislocated, the foot being turned inwards and the sole upwards, so that the individual walked on the ends of the leg bones.

" In two cases now under my observation there is paralysis of one side of face, and the fingers are contracted on the palms. In one case the sight of the eye on the affected side was destroyed."

The only allusion to what can be regarded as possibly the disease of leprosy, in its early stage, among the Chinese labourers in the colony of *New South Wales* is that by Mr. Mason, of Tenterfield, who describes " a form of cutaneous eruption consisting of small shining " spots or tubercles of a livid colour, which often discharge a very offensive fluid, and are " followed by silver-looking scales."

No traces of the disease have been discovered among any other portion of the population in our Australian colonies than among the Chinese immigrants. It has not been seen in *South* or in *West Australia*, in *Queensland*, or in *Tasmania*.

New Zealand.—That the disease described by the late Dr. Thomson, of the 58th Regiment (*vide* Appendix, p. 223), as occurring among the natives, was of a truly leprous character admits, we think, of no doubt. It would be highly interesting to obtain further information respecting this endemic malady among the New Zealanders, especially as it appears to have been of recent years becoming less frequently seen, and may possibly, as Dr. Thomson predicted, cease ere long to be met with.

In the chain of islands lying between the Cape of Good Hope and Ceylon, including *Madagascar* and adjacent islands of St. Marie, the French colony of *Bourbon* or *Reunion*, and our colony of *Mauritius*, with its dependency of the *Seychelles* group, leprosy is very prevalent. In the description of the disease as it occurs in *Madagascar* (*vide* Appendix, p. 220), Dr. Davison draws attention to a peculiar appearance of the discoloured spots on the skin, in the early stage of the malady, arising from the falling out of the hair :—

" The hairs upon the part become yellow and stunted, and after a time fall off, leaving the " hair bulbs (follicles ?) empty, patent, and enlarged, especially on the face, so as to present " one of the most diagnostic signs of the malady. So characteristic is this of leprosy, either " as a latent diathesis or a developed disease, that I have never known a leper who did not " present it." Moreover, there was always more or less anæsthesia in the affected parts.

Mauritius.—Dr. Finnimore, in the following account of the disease, alludes to the kindly healing of wounds in lepers, notwithstanding their constitutional cachexy :—

" Leprosy here is characterised by tubercular swellings on the face, nose, forehead, and ears, the cartilages of the nose and ears being sometimes thickened by tawney discolourations of the skin, pervading the entire body, generally in patches. The discolourations are deepest over the tubercles. The hands and feet are peculiarly affected; the fingers, toes, and soles of the feet are the parts first attacked. The epidermis first becomes harsh and scaly, and then horny; it cracks, and fissures are formed, from which a thin ichor is discharged. The ulceration extends deeper and deeper through all the tissues, bone and cartilage included. In this way the extremities of the toes and fingers literally rot off. As soon as a phalangeal joint is destroyed, the diseased action seems to arrest itself at this particular spot, and the extremity of the phalanx will remain attached to the member simply by a string of soft tissue, for an indefinite period; a source of great annoyance to the patient, until it is removed by the knife. And here I may remark, that amputations of all kinds (and I have performed many on lepers) heal with a rapidity rarely met with in healthy persons. Perversion and loss of cutaneous sensibility are frequent in the course of the disease. Cutaneous secretion is always much diminished; frequently almost entirely arrested. There is always more or less emaciation."

The elephantine enlargement of the inferior extremities, or " Barbadoes leg," is also very common in the Mauritius. Mr. Ford remarks :—

" They are, in my opinion, only varieties of one morbid state; one form may run into or be accompanied by another, and sometimes the various forms become blended in the same patient; they occur, too, in the same countries and localities, and under similar circumstances."

India continues to be, as it has been for ages, one of the principal seats of leprosy in the world. No province of the empire, from Point de Galle to Peshawur, or from the Indus to the Straits of Malacca, seems to be exempt from the evil; and nowhere certainly might it be more advantageously investigated. Hitherto the subject has excited but little attention either in a scientific or social point of view. It is to be hoped that the present inquiry may lead to a more thorough and systematic examination of a malady which affects so deeply the material well-being and interests of millions of our fellow-creatures, subjects of the British crown.

Ceylon.—" Leprosy is not an uncommon affection among the lower orders of the natives. I have seen it occasionally in Europeans and the burgher classes. The disease is commonly but erroneously put down as 'lepra,' and, I believe, it has been for years included under that head in the medical returns.

" Leprosy is seen in two forms, the tubercular and anæsthetic varieties. Occasionally these two forms are found combined in the same patient. I believe they are only varieties of the same disease, depending upon one morbid action.

" The tubercular form sets in with a shining and discoloured appearance of some portion of the skin, attended sometimes with loss of sensibility; the discoloured patches are afterwards found raised; they then become thickened and tuberculated, the tubercles generally appear

on the ears, nose, fingers, and toes. Suppuration ensues, leading to contraction of the small joints, or these become destroyed by sloughing ulceration. A fatal diarrhœa generally terminates a miserable existence.

"The anæsthetic variety is, I think, comparatively rare in Ceylon. It commences with impairment of general health. Vesicles form in different parts of the body, which lead to destructive ulceration, attended with falling off of the hair and general emaciation. The articulating processes of joints sometimes become absorbed, leading to anchylosis. Diarrhœa is generally the fatal termination of this variety also."—(*H. D.*)*

One of the respondents, in his description of the disease, says:—

"The symptoms of this disease are such that, in various parts of the body the skin exhibits circular scaly patches, is thickened and elevated; and that, in process of time, the patient suffers from blisters in the fingers and toes, followed by ulceration. In a subsequent stage, excavated ulcerations appear in the soles of the feet, after which, exfoliation of the smaller bones in the diseased parts takes place."—(*J. G.*)

Besides the tubercular and anæsthetic forms of the disease, mention is made of a third kind, of which the only symptom is the whitening of the skin, in small spots or patches at first, subsequently extending over a great part or the whole of the surface, and which is seldom attended with ulcers or other physical suffering. It is regarded as the white Jewish leprosy, and is very common in Ceylon, particularly in the N.W. province. The hair on the affected parts becomes quite white from the very beginning of the disease.

Bombay Presidency.—Leprosy is well known in this presidency, including Aden; but it is said to be rather uncommon in Scinde.

a. Those observers who write from sufficient experience of the disease distinguish two forms of leprosy, and Dr. H. V. Carter (whose replies are much fuller than any others) speaks of three varieties, viz., *first*, white leprosy, or shvet kusta, probably a variety of the leuke of the Greeks, the baras or beres of the Arabs; it is also called khoor by the Sindees: *second*, guleet khusta, sunbahiree, of the Hindoos; it corresponds with anæsthetic leprosy, articular leprosy, &c.: *third*, tubercular leprosy, elephantiasis, leontiasis, &c., of the Greeks, the lepra of the translators of the Arabian writers, the da-al-asad (lion disease) of the Arabs, and the ructa kusta, ructa pitia, maha viadhi, of Hindoos. The first and second forms are commonly confounded under the name of white leprosy; the third all agree in naming black leprosy.

b. The unanimous opinion is that the varying forms of leprosy are merely different phases of one common morbid state. It seems to be not uncommon for a leper to be affected with two forms at once. Dr. Bell, writing from the southern Muratha district, while confessing that his experience of leprosy has been extremely limited, says, "I had always been of "opinion that there were two forms of the disease, viz., white and black leprosy, but from "careful investigation I now find that there is no affinity between them; that which I "regarded as white leprosy is a distinct disease, never passing into the jujam, or leprosy "proper of the natives. The Mussulman name for it is buras (baras), the Murathee "kode. In character and appearance it strongly resembles the lepra vulgaris of many "authors."—(*Dr. Stovell.*)

c. In reply to this query, Dr. Carter refers to his pamphlet on leprosy, already forwarded to the Royal College of Physicians. The following is a summary of the symptoms he enumerates, with a few additions from Surgeon Steinhaeuser's replies:—

Form 1.—An eruption on the skin, accompanied by anæsthesia.

Form 2.—Anæsthesia of the skin of the face, ears, and extremities, followed in the latter case by atrophy, instertitial absorption, and occasionally ulceration of the benumbed parts, notably of the fingers and toes, with little or no constitutional disturbance. Large circular superficial ulcers may form on the lower extremities. The affected finger and toes become contracted, the joints enlarged, the ends of the fingers broad, flat, or clubbed.

Form 3. Tumefaction, or tubercular thickening of the skin, principally of the face, also of the extremities; less marked on the trunk. The affected skin is discoloured, dark-bronzed, shining, its sensibility much diminished or entirely lost. The mucous membrane of the mouth ultimately becomes affected, and the voice altered. Contraction of the fingers and toes is a frequent symptom, and the phalanges may drop off from ulcerated fissures forming over the articulations, or from sphacelation supervening on ulceration; the entire hand or foot may thus be lost. The constitutional disturbance is much greater in this than in the previously described form.

The eruption characterising form 1 is thus described in Dr. Carter's pamphlet:—

"Patches or spots of a circular or annular form, size $\frac{3}{4}$ in. to 3 in. or more in diameter; edges raised, of a pinkish hue, free from scales, slightly cracked or wrinkled, centre depressed, pale, dry, glistening; a tendency to spread and join so as to cover larger spaces. The centre

* The names of the respondents are not given in full.]

of the patches is insensible, often completely so, and always in the older ones. Their appearance is not preceded or accompanied by any general symptoms, or even local signs of irritation; there is nothing like hyperæsthesia at the commencement. The patches commonly occur about the shoulders (front) and hips (back), behind the elbows, and in front of the knees; on the face the temple and cheeks are frequent positions, sometimes where the branches of the fifth cranial nerve emerge; the trunk and limbs are often affected in a perfectly symmetrical manner, and there is always a strong tendency to such an arrangement. The eruption begins as a small reddish, flattened elevation of the whole skin, giving the impression of a tubercular character to it. Squamæ, discharge, and scabs are absent; even a furfuraceous desquamation of the cuticle is by no means common. The hairs on the patches are few and atrophied, but seldom blanched; the function of the glands of the skin is suspended or diminished; blood readily flows on puncture of the surface. In less marked cases the distinction of margin and centre is apt to be obscure, but anæsthesia is always present in the latter." *

In many cases the appearance "is a light discoloured state of the skin in the form of "large patches, the surface of which may present hardly any other changes beyond those of "colour and sensation; but the often rounded form (particularly when small), defined and "slightly raised, reddish margin, and dry, shrunken, anæsthetic centre—characters sometimes "common from the very first, and imparting an aspect which to an experienced eye at once "reveals the nature of the disease—clearly connect this form of eruption with the preceding."

That there is a connection or affinity between this form of disease (baras) and tubercular leprosy cannot be doubted. At the same time, Dr. Carter admits that the appearances are, in several points, not very dissimilar from what are seen in some ordinary and tractable skin diseases, as in *lepra vulgaris*, &c. He remarks—

"First, there is a rare eruption consisting of rounded, raised, flattened spots of a pale tint, covered with a thin cuticle which readily desquamates, and is very tender and vascular: the colour is like veal's flesh; there is a tendency to form excoriations, but most seem to subside, leaving small level (slightly depressed?) smooth, livid, shining marks, not unlike the cicatrice of small-pox in natives, only less uniform in size and not so puckered."

"Next, a much more frequent skin disease occurs, which much resembles ordinary lepra; large, rounded, scaly patches, accompanied with local irritation and often thin discharge, are seen particularly around the lower part of the waist and groins, also in other parts: this is certainly not connected with leprosy, though mentioned as such by the Hindoo authors, who like their successors in Europe, included many skin diseases under that head. Again, very often in natives we see palish spots on the skin, often clustered, and common about the neck, &c., which are also innocuous: an intelligent patient told me they are known as 'sibbla.' I have once seen this appearance in a leper who, however, himself spoke of it as 'kuchh nahin'—not worthy of notice. Ordinary skin diseases, as herpes, eczema, scabies, &c., are common enough, but except 'gachkaram (lepra?), the scaly eruptions are not so: perhaps the habits of the people and the climate have some influence in this respect. Syphilitic eruptions of various kinds are often seen, papular, scaly, tubercular, but I have not found any difficulty of diagnosis to arise hence."

Madras Presidency.—"Leprosy (the lepra Arabum, elephantiasis Græcorum of dermatologists) is a disease of frequent occurrence throughout the Madras Presidency, more especially in all the large towns on the eastern and western coasts, but more especially in the latter. At stations somewhat inland, though known, it cannot be said to prevail.

"Two distinct forms of the disease are recognised throughout the Madras Presidency by those who have had the most extended opportunities of studying it. Some of the reporters, Furnell, Rean, and Shortt, describe a third form under the name of lepra leucopathica vel albida, (vullay koostum, Tamil); but this appears to be a species of albinoism, commencing insidiously with spots on the extremities, trunk, or face, which enlarge without structural change, and without much functional derangement coalesce, occasionally increasing to such an extent as completely to assimilate the dark skin to that of a fair European. . . . . This affection in none of its essentials resembles leprosy, nor does the black discolouration which is also occasionally met with.

"*Lepra anæsthetica*, poonnah kooshta themir coostarogum (Tamil).

"The anæsthetic form of the disease is the most common in Southern India; we find that in 1864, out of 75 cases at the leper hospital, Madras, 45 were of the anæsthetic form (Dr. Van Someren's pamphlet). In Cochin, Dr. Day does not state the proportion, but he says the anæsthetic form is the most common.

* A coloured drawing is given by Dr. Carter of one of the cases, in which the annular patches on the thigh and leg, having the centre pale and somewhat depressed, and the margin broad, raised, and of a purplish hue, are well represented.

"*Lepra tuberculata*, koostum coostarogum (Tamil), appears insidiously without any or but ill-defined constitutional symptoms; burning and itching are complained of in the face and extremities, and the skin is often dry, bronze, or fawn-coloured; raised patches of various shapes and dimensions soon appear on the face and extremities; sometimes they present a glazed and shining appearance, or the reverse. These elevated patches are often hypersensitive (Day, Van Someren) in the first instance, but gradually become insensible and continue so, &c. &c.

"The anæsthetic and tubercular forms or varieties are often combined in the same individual, constituting a mixed variety. In neither do any definite or well-marked constitutional symptoms precede the local development of the disease, but both are often complicated with other skin diseases, especially scabies, psoriasis, chronic eczema, and venereal eruptions."—(*Mr. Shaw.*)

Bengal Presidency—Bengal Proper.—Dr. Jackson remarks that "Leprosy is known in "the province of Bengal and generally throughout India, though not so extensively in the "upper and midland parts of India as in the lower provinces, and especially in the districts "bordering on the sea."

Pooree or Juggernaut.—Leprosy has been known to prevail in this district for centuries. It is confined mostly, if not chiefly, to the only large town in the district, which is known by the name of Juggernauth or Pooree, and is so called after the great Hindoo pagoda or idol of that name therein situated. For the worship of this idol hundreds of thousands of poor and footsore pilgrims can be seen constantly treading the weary way to it, the victims of an idolatrous and designing religion; thousands dying by the wayside from exhaustion and disease; and the remainder usually returning to their homes with the germs of this and various other diseases taken up as it were on the way and engrafted on them, to be more fully developed into action by-and-by, when the period of temporary excitement has passed over, and the body falls into the succeeding and more unfavourable stages of depression and exhaustion. But, again, there are a class of pilgrims who, contracting the disease (leprosy) entirely at their homes, seek a pilgrimage to this place for the express purpose of being cured, as they hope, by offerings and other propitiatory prayers to another idol called Lokenauth (who has also a shrine set apart for him, and whose peculiar attribute is believed to be the healing of diseases of such a foul nature); but the unfortunate wretches soon finding all their expectations vain, and no good to attend their devotions, and now unable to return to their friends, from being looked upon as outcasts, and as beings visited with the curse of the Almighty, are content to remain about this place as beggars, penniless and homeless, and as associates for none but the indigent and dissolute, ready to join in every degrading crime, and early giving way to and sinking under habits of intoxication and other similar vices.

Furreedpoor.—Dr. Rose describes the most common different kinds of cutaneous eruption occurring in leprosy, as the papular, the tubercular, the bullar, and the squamous:—

The papular form consists of an eruption of small circular, elevated flattened points, or of even larger papulæ, sometimes reddish, distinct or closely clustered together, seated on an erythematous base of various shapes and sizes, generally slightly raised at the borders and depressed in the centre. These patches appear chiefly on the forehead, face, anterior part of the trunk, back, and on the outer aspects of the limbs. Their evolution is at first attended with much tingling, pricking, and a hot burning pain; these, however, soon subside, followed by anæsthesia, while the eruption gradually degenerates into a thick continuous squamous formation, in which the whole body is often more or less encased. Sometimes, as the disease advances, and in particular situations, as the face, forehead, nose, and ears, the papulæ will grow larger, more closely set and irregularly prominent, giving that swelled mammilated appearance to the features so remarkable in certain cases of this variety of leprosy, and which is not unfrequently mistaken for its more formidable congener, viz., the genuine tubercular malady.

Various vesicular and pustular eruptions, as herpes, eczema, strophulus, and porrigo, are frequently present at the same time.

The tubercular eruption consists of various sized and irregular shaped tubercles on the surface, sessile or somewhat pedunculated, scattered or crowded together, generally smooth, shining, soft, and insensible, and are either livid, dark brown, or fawn-coloured; they are usually preceded by reddish insensible patches, and occur most frequently on the face, nose, ears, lips, eyebrows, and chin, causing, with the thickened rugose state of the intervening skin, that frightful distortion of the features so remarkable in this form of leprosy.

The bullar or pemphigoid form is characterised by the eruption of some bullæ resembling pemphigus, generally coming on without any warning or knowledge of the patient, but, if

occurring during the earlier stages, it may be preceded by some tingling and pruritus. They seldom appear more than few at a time, and are chiefly confined to the extremities, especially below the ankle and wrist joints. Their mode of termination is either by drying up and scabbing, or by ulceration and cicatrization. Sometimes the ulcers thus produced become gradually deeper, with a constant thin ichorous discharge, and never heal up until considerable portions of the feet or hands have been destroyed. The accidental erosions and burns to which the deadened limbs of lepers are liable cannot be confounded with this genuine eruption.

The squamous form is the most frequent and universal in leprosy in tropical latitudes, and, from our knowledge of the disease in India, we might say that a full three fourths of the cases ordinarily met with in this country are of this description. Three principal varieties of this description may be distinguished; viz., in one, the patches are of a circular shape, the same as in psoriasis circinata; in the second, they are irregular, and cover large surfaces, as in psoriasis diffusa; and lastly, in the third, they occur in bands or lines most curiously twisted, as in psoriasis gyrata.

In the first variety the scaly patches are circular, varying in size from that of a shilling to a dollar, more or less rough, and raised at the circumference, but smoother and depressed in the centre, and appearing at first a few and scattered on the limbs, afterwards more numerous on the back and rest of the trunk. In some cases, the circles after a time may break up, and disappear, followed by the diffuse form, and in others these two varieties may be variously intermingled; sometimes the patches will go on increasing till large surfaces may be affected. The accompanying anæsthesia is either limited to the eruption, or may extend to other parts, even at a considerable distance from it. The eruption is originally papular in character, the papulæ being somewhat flattened and each covered with a scale, which is successively renewed.

Besides the tubercular and the anæsthetic forms of the disease, a third form, to which the term of leucopathic (leuce, lepra albida, &c.,) is generally applied, is frequently mentioned in the reports from the Bengal Presidency.

Burdwan.—In this form (lepra albida), there is merely absence of colouring matter, varying from specks the size of shot to that of large patches, which spots, on being pinched or pricked, are found void of sensation, which generally extends a little way around their margins. The face mostly partakes of the characteristics above mentioned, with partial or entire loss of eyebrows. The patches are mostly confined to the forehead, calves, ankles, feet, hands, and occasionally to the glans penis alone; are dry and mostly devoid of hair; if any exists it is thin, scattered, and ultimately disappears. Previous to loss of colour there is considerable itching experienced in the part, with a dull feeling and dryness. The patches about the hands may or may not ulcerate, and I have seen death from diarrhœa at the age of sixty or sixty-five, when there was no ulceration in any part of the body; the lungs containing tubercle in a hard and softened state, with unusual ashy paleness and knottiness of the liver. —(*Dr. Williams.*)

Mozufferpore.—In this form, although the change in the colour of the affected parts appears to be simply due to an absence of pigment in the skin, (which, together with the hair upon it, becomes perfectly white, but continues to perform its functions as in health,) there is reason to believe that it is allied to leprosy. The following is one among many cases of leucopathia which makes Mr. Macnamara think so:—"A rich zemindar applied to me "about a year ago suffering from this form of the disease, his arms and face being perfectly "white. He was the eldest son of his father, who had died from the second or ulcerative "form of the disease. My patient's only sister was affected like himself, and his brother in a "similar way to his father His only son, a lad of fifteen years of age, is now under my "treatment for the third or tubercular form of the disease. This son was born prior to the "leprosy having manifested itself in the case of the father, since which he has ceased to "cohabit with his wife, and, as far as I can ascertain, she has no symptom of the "disease."

North-west Provinces—Ghazeepore.—Leprosy is a very common disease in this district. The general characters of the anæsthetic form (soonbeharee) are these:—The eruption on the extremities or trunk, or on the head and face, of spots, circular at first, but afterwards irregular in shape, varying in size from that of half a split pea to a patch of from six to eight or more inches in diameter, of a reddish colour in recent cases, but subsequently several shades lighter than that of the surrounding healthy skin; their border raised about one half to three fourths of a line above the surface, granular to the touch, like a circle of grains of sand, and from one to two lines broad; within this outer margin, surface of skin smooth, thinner than normal, seemingly depressed below the surrounding healthy surface; hairs absent or stunted; rarely scales or desquamation; no cracks; occasionally a few isolated tubercles.

Sneenuggur.—In the tubercular form there is development in the skin and in the mucous membrane of the mouth, fauces, and nares of erythematous patches, patches of discolouration or maculæ, and tubercles. The erythematous patches are at first of a red or purplish hue, of various sizes, and generally round or oval, most deeply coloured in the centre, and fading towards the circumference. After the existence of the patches for some time, the redness of the centre subsides, and gives place to a brownish stain, while the circumference spreads for a short distance, and forms a ring with a well-defined border; later still, the redness disappears entirely, and leaves behind it a brownish stain, which is more or less permanent. Sometimes the central portion of the patch becomes bleached and quite white and smooth. The centre of the erythematous patches is harder to the touch than the surrounding skin; the epidermis frequently desquamates over it; the tissues of the skin become thickened and more and more condensed and elevated above the surrounding skin, sometimes remaining flat, sometimes attaining by continued thickening the form of a tubercle. The tubercles present the dull red and purplish hue of the erythematous patches for some time, but sooner or later assume the brownish tint of the discoloured skin, or become whitish; the tubercles remain unchanged for a considerable time, or become inflamed, soften, and ulcerate, giving out an ichorous discharge; those in the fingers, toes, and tip of the nose ulcerate early.

Furruckabad.—Leprosy exists and has existed in the district of Furruckabad from time immemorial.

a. It consists of two varieties, named respectively elephantiasis anæsthetica, and elephantiasis tuberculosa; both are known in Hindostan by the common designation of korh. There is besides a peculiar affection of the skin, characterised by irregular shaped patches of a white colour, which is frequently confounded with leprosy, though it has no connection with it, being merely an unsightly blemish not attended with any danger to health. I allude to that condition of the integument closely allied to albinismus, and known by the names of chloasma album, vitiligo, leucopathia, &c. In the East it is called besas.—(*Dr. Grant.*)

Punjaub—Lahore.—Besides the tubercular and the anæsthetic forms of the disease, there is the white or the Jewish leprosy, the berat of Moses. Of this I have seen instances of both the berat lebena and the berat cecha, or the bright white and the dusky lepra. The berat lebena occurs in the form of one or more pearly spots; the white patches are the same as the healthy skin except in colour, and that they are either free from hairs, or that the hairs turn white and silky; sensibility is not affected in pure cases. I have seen the disease co-existing with the lepra anæsthesiaca as well as with true (tubercular) leprosy.

The natives consider albinos to be lepers, the disease being supposed to be berat lebena; and indeed the white leprosy appears to me to be physiologically undistinguishable from albinism, except in the fact of the latter being congenital and affecting the whole body, and the former not congenital and affecting only parts of the body; both consist of an absence of pigment, and do not of themselves affect the general health.—(*Mr. Bose.*)

Central India—Augur.—Leprosy is of frequent occurrence in Malwa, Central India.

The forms of cutaneous eruption peculiar to leprosy which I have met with are three:—

1st. Consists of tumefaction or thickening of the skin in large patches, one on each cheek, eyebrow, lobe of the ear, on the nose, lips, and chin, also over the upper part of each sterno-mastoid muscle, just below and behind the ear. The skin in the affected parts is of a darker colour; looks coarse and slightly uneven; feels thickened, firm, and somewhat tuberculated. The margin of the patches is undefined, and shades off into the healthy skin. The sensibility of part is unaltered.

In cases in which this eruption occurs it is almost always the first symptom of the disease, and is followed by the anæsthesia, sooner or later; it may be in a month or two, or not for one or two years. In a very few cases the two symptoms are cutaneous, and in fewer the anæsthesia is first developed.

2nd. This eruption consists of spots or patches of a circular shape, varying in size from a small papulæ to two or three inches in diameter. In the large spots the centre is depressed, smooth and whitish, the margin defined and raised, of a pale red colour, and when not exposed to friction, covered with a minute white powdery desquamation. There a loss of sensibility in these patches from their earliest appearance, which increases till there is perfect anæsthesia in their centre, shading off into slight numbness at the edges. The eruption begins by a few spots, others follow, new ones continuing to be developed during the entire course of the disease. The spots first appear as small papulæ, very much resembling those of urticaria. These slowly increase in size, preserving their circular form till they are two or three inches in diameter, or often coalescing from large irregular shaped patches.—(*Dr. Beaumont.*)

Mysore—Bangalore.—Lesion of sensation, associated with some affection of the skin, is, in my opinion, the most constant symptom of leprosy, and may, indeed be considered pathogno-.

monic; for though in some cases there may be tenderness or pain, yet in every case there is also some degree of numbness and insensibility to ordinary impressions on the skin.

The tubercular form of the disease is very generally accompanied by a squamous, scabby state of the skin, but particularly of the extremities. In some cases of this form of leprosy the disease commences and is characterised principally by a severe chronic eczematous mange-like condition of the skin generally, but more especially affecting the usual sites of scabies, or about the flexures of the joints between the fingers, &c.; and indeed cases of this kind seem almost either induced by or are much aggravated by scabies in a virulent form, and may be relieved to a considerable extent by a treatment appropriate for scabies. The diagnosis of leprosy from obstinate chronic eczema merely is, in some such cases only, determinable by the co-existence in the leprous cases of lesion of sensation.

White leprosy, or leuce, is certainly an entirely distinct disease from leprosy proper, though I have met with a few instances which induce me to think the two diseases occasionally co-exist in the same person.

White lepers suffer like albinos much from sun burning, their skin getting readily scorched and blistered by exposure to the sun's rays. Sensation remains unimpaired in the parts of the skin which are decolourised. I have seen no sufficient instances to induce me to think that any one of these forms of leuce progresses into the other.—(*Dr. Kirkpatrick.*)

Nipal—Khatmandoo.—Leprosy is common throughout Nipal, and is met with in three different forms, all of which are known under the same name of "core," or sometimes of "maharogue." These three forms are, 1st, lepra vulgaris; in its early stages it has the same general appearance as it exhibits in Europe, but the patches on the skin are more livid, and, as the disease advances, it is marked by a great tendency to swelling of the integuments and ulceration and sloughing of the nose and lips, as well as of the smaller joints of the hands and feet. 2nd, lepra alphoides, marked by the whiteness and scaliness of the cutaneous eruption, and by its slow chronic character, and its tendency to terminate in drying up, rather than in swelling and sloughing of the extremities. In its later stages it is often accompanied by loss of sensation in the skin, and by partial paralysis of the affected limbs. 3rd, lepra syphilitica, which is met with when either of the above forms is modified by the presence of syphilis.

2.

(*a.*) At what age does the disease generally manifest itself? (*b.*) and what are usually the earliest symptoms observable?

(*a.*) *New Brunswick.*—"Most frequently about puberty; but it may occur at any age from childhood to 50."—(*Dr. Gordon.*)

"The youngest patient when admitted into the hospital was nine years; the oldest was 63."—(*Dr. Nicholson.*)

Jamaica.—"I have not seen any case, in either of its forms prior to four years of age. At and soon after this age, I have met with many examples of the tubercular leprosy; but not any case of the anæsthetic earlier than the eighth or tenth year, and not later than the meridian of life; while the tubercular occurs not unfrequently at a very advanced age."—(*Dr. Fiddes.*)

St. Lucia.—"Generally, shortly before or after puberty. In the offspring of lepers it may appear at birth, and often does in various forms of malformation."

Antigua.—"When it attacks in infancy, there is sometimes a complete arrest of development."

Barbadoes.—"Of 42 inmates of the lazaretto, it commenced in 29 before 16 years of age; in seven between that age and 26; and in six between 31 and 54."—(*Dr. Browne.*)

Guiana.—"It seldom displays itself before puberty, but I have seen well-developed leprosy at eight years of age."—(*Dr. Pollard.*)

"I have seen the disease manifest itself at different ages, from three to 12 years."—(*Dr. Manget.*)

Cape of Good Hope.—"In the hereditarily disposed it seldom occurs before puberty. I have seen it however, as early as two years of age. The usual period seems to be from 20 to 35 years."—(*Dr. Abercrombie.*)

Jerusalem.—"Generally at the time of puberty."

Damascus.—"Generally in adults; but many cases are also known of children of tender years being attacked."

Scio.—"Generally about 18 or 20 years of age; but when hereditary predisposition exists, as early as five or seven."

Crete.—"It is only among the Jews in Crete that I have ever observed the symptoms in infancy or early youth. It seldom appears before puberty."—(*Dr. Mongeri.*)

Constantinople.—"It is very rarely seen before the 10th year. Once only has a child been seen at birth covered with tubercles, the offspring of leprous parents."

Tabreez.—"At all ages; but the youngest I have seen was about eight years. It does not generally appear till much later."—(*Dr. Cormick.*)

Shanghae.—"The most common age is from 22 to 38."

Mauritius.—"At any age from infancy to late in life. Medical men seldom see cases at their commencement, they are too often kept secluded."—(*Mr. Ford.*)

Bombay Presidency.—The general opinion seems to be that the disease most generally manifests itself between the ages of 15 or 20 and 30 years.

Madras Presidency.—Dr. Day has seen leprosy in an infant in arms whose mother was a leper, and Dr. Porteous has treated a child of four years old; but out of 58 patients in the leper hospital, Madras, in February 1863, in two only had the disease appeared before the 10th year of life. Dr. Van Someren gives a table showing that in 58 patients, 15 cases of the anæsthetic and 16 of the tubercular form, or in 31 out of 58 cases (53 per cent.), the disease appeared between the 20th and 30th year of life.

Bengal Presidency.—"It rarely appears before puberty; it generally manifests itself later in life. I have never seen it in its worst form under 18 years of age."—(*Dr. Jackson.*)

Calcutta.—From the age of 20 to 30.

Cuttack.—It occasionally manifests itself in children as early as the fifth year, but the more common time appears to be between 20 and 30.

Midnapore.—It prevails at all ages, from infancy to old age; but it appears to be much more common after than before puberty.

Loodiana.—According to the patients statements of 19 cases examined by me, says Mr. Butt, none were affected under seven years.

From 7 to 10 years of age - -	4	From 30 to 40 years of age - -	2
„ 10 to 20 „ - - -	6	„ 40 to 50 „ - - -	3
„ 20 to 30 „ - - -	2	„ 50 to 60 „ - - -	2

So that 10 out of 19 appear to have become affected between the ages of 7 and 20 years.

Nagpore.—In the anæsthetic and tubercular forms, one, a male, was born so, and denied an hereditary taint; in the youngest, a male, it began at five, in a brother at seven, and the father, who was dead, had suffered from the disease; the eldest, a male, was 68; no hereditary taint being confessed.

Bangalore.—It most commonly manifests itself in adults of middle age, but sometimes it shows itself in very young children. Thus I have seen, says Dr. Kirkpatrick, children of 5, 7, and 12 years of age affected with it, and sometimes the first symptoms are only shown at an advanced age.

(*b.*) *Bermuda.*—The first appearances, in a case which Dr. Hinson watched from its commencement to its fatal termination, were these:—Erythematous patches of a bright red colour on the forehead, nose, and ears, giving the person the appearance of being overheated by exercise, and subsequently on the hands, feet, and scrotum. These patches continued thickening until they became distinctly tuberculous, while at the same time the sensibility in them, and more especially in the hands and feet, became so acute that the least touch occasioned intense pain. The tubercles went on increasing in numbers and thickness until they became general over the whole of the body.

Jamaica.—"For several months—from 2 to 12 or 18—before the appearance of any spots "or patches on the surface in the tubercular form, there is very generally more or less "distinctly marked malaise experienced,"—"an indefinite feeling of something wrong,"—"chills like ague,"—"rheumatic pains about the extremities,"—"creeping pricking sensations "of the limbs,"—"stiffness and numbness of parts,"—"a falling asleep of a limb, a hand or "a foot, finger or toe." This state, or these sensations, are generally referred back to some sudden exposure to alternations of temperature, to sudden chills when heated, to coming out of doors after a vapour bath, to exposure during a chilly night in the streets while assisting to put out a fire, &c., &c.—(*Dr. Bowerbank.*)

Dominica.—" Among the early symptoms, the patient experiences an unusual numbness in his fingers, he cannot feel or grasp any object as formerly; the alæ nasi swell, and there is puffiness of the upper lip."

Barbadoes.—" The skin of the face has a shining appearance, with usually a yellowish spot in the centre of the forehead, extending down on each side of the nose. These appearances are soon followed by similar spots about the body."—(*Mr. Moore.*)

" The earliest symptoms are the appearances of ' yellow spots,' and insensibility of the skin to external stimuli. Thus melted loaf sugar accidentally dropped on the fingers without producing any sensation gave rise, in a young white female, to suspicion, which was shortly afterwards confirmed by leprosy manifesting itself more decidedly. The ' yellow spots ' alone do not necessarily constitute leprosy, or are followed by it. They must co-exist with a rough elevated or swollen condition of the parts; and if anæsthesia be also present, the diagnosis is the more certain. Generally the earliest indications are found in the elbows and knees; and I have always made it a point, when the facial signs admitted of a doubt, to examine those parts, and if the symptoms were present there at once to declare the nature of the disease."—(*Dr. Goding.*)

Cyprus.—" Before the appearance of any spots on the skin, there is in many cases a general malaise of the system, frequently supervening upon a sudden check of the perspiration, with great physical and mental depression."

Samos.—" There is very generally a precursory stage of ill-defined constitutional disturbance, with or without febrile symptoms, before the characteristic symptoms appear."

Scio.—" In the humid (tubercular) leprosy, the earliest symptoms are the falling off of the hair, and patches as of frost-bites on the hands and feet, with more or less insensibility of the skin. In the dry (anæsthetic) leprosy, a slight impetiginous eruption on the arms and legs, or of small somewhat raised papulæ covered with a dry whitish crust."

Corfu.—" The earliest visible symptoms are the swelling of the face, and the appearance of spots on the skin. Occasionally, these symptoms are preceded by great general weakness, despondency, and inability to work. One patient, whose parents were quite healthy, told me that the disease began after an inflammatory fever caused by taking a cold bath."—*Dr. Tygaldos.*

Mauritius.—" The earliest symptoms are patches of discolouration, such as in England would be called ' liver spots,' which show a great want of sensibility."—*Dr. Powell.*

" In one set of cases, the earliest symptoms are the tubercular swellings and cutaneous discolouration, followed by the other symptoms above described, in varying order and severity. This is the course I have invariably observed in patients of European birth or origin, as well as in those of African origin and mulattoes. In another set of cases, confined almost entirely to the Indian population, the true leprous symptoms are preceded by a peculiar affection of the nerves of the foot, indicated by an intense burning sensation; the general health frequently breaking down under it, and the patient dying of marasmus. I by no means consider this a symptom of leprosy, and still less that every patient suffering from it must necessarily become a leper; but I have so frequently observed that it is a precursor of the disease, that I cannot but think that it has an intimate relation to it, or, at any rate, that the causes which produce the two affections must be mutually related. Whether this symptom occur or not in this form of the disease, one of the first things observed is the induration of the skin on the soles of the feet; the skin cracks, and the same morbid changes ensue as described in the other variety. The disease gradually extends to the legs and hands, and the skin of the whole body becomes dry, scaly, and discoloured; but rarely do tubercles occur in this variety. Perversion or loss of cutaneous sensibility invariably occurs."—(*Dr. Finnimore.*)

Bombay Presidency.—The following are symptoms first seen and felt in this disease :—

Anæsthetic leprosy.—Pricking, shooting, burning pain in the fingers, toes, susceptibility to cold, and a feeling of heaviness and weakness, with tremor, in the parts. Fever is not a special attendant on leprosy. These local sensations are frequently so slight as to pass unnoticed by the patient, the numbness being then the first symptom observed, and so the disease goes on to more advanced stages.

Tubercular leprosy.—An eruption in the mixed form is the first symptom, then the face becomes tumefied, afterwards the trunk and extremities.

Bengal Presidency.—The earliest symptoms depend upon the variety. In the first form of the disease, Λευκη, there is a small discolouration of the skin, which loses its deep colour, or if upon the lips in a fair person the pink colour becomes changed to white.

In the second form there is generally a dark greasy stain in two corresponding parts of the body, slightly irritable in the first instance, and by slow degrees becoming insensible; at

the same time there is a want of sensibility in other parts of the body, such as the legs and thighs. The countenance also assumes a livid or orange appearance, and there is a peculiar watery relaxed expression of the eye; a state of general indisposition, with depressed spirits, supervene, followed for the most part by a languid and miserable existence.

In the third or worst form it shows itself in the dulness of the conjunctiva, and the eye and lids put on the character of chronic conjunctivitis. The lids afterwards become thickened and the eye irritable, the alæ nasi become swollen, the Schneiderian membrane irritable and red, and a slight discharge takes place. The pinna of the ear is thickened, and there are small elevated unctuous patches on the forehead. With these symptoms, there is a want of sensibility in the upper and lower extremities, slight bruises will often produce a sore and ulcers, which do not heal readily.

Dr. Jackson adds, "There is a peculiar affection of the "hands considered as leprous, in "which there is a constant exsudation of sensible perspiration, so that when the hand is "raised, the fingers being dependent, there is a continual distillation from the tips of the "fingers, like water passing through a filterer. I have several times seen men lose their "situations as writers from this affection, the paper being so greatly moistened as to be spoilt for "writing. There is an opposite condition to this, where the palms of the hands and soles of "the feet are dry and harsh, with deep fissures and ulcerations, and where the nails of the "hands and feet are diseased."

Moorshedabad.—The disease, which is common in the districts of Moorshedabad, generally commences with a sensation of heat or burning of the skin, which is shortly followed by the eruption of small, smooth, and prominent spots (papulæ and tubercles) of a dark red colour arranged in a circular manner, and more or less elevated above the surrounding healthy skin; these patches gradually extend, and are sometimes covered with dry white scales. The usual seats of the disease are the fingers and toes, ankle, knee, and elbow joints; the back and shoulders are also frequently affected. Diminished sensibility of the part attacked is an invariable symptom.

Chumparun.—In the anæsthetic form, the first and most constantly noticed symptom is that of tingling running along the nerve from the affected part up the extremity, increased by touching, striking, or pinching any part of the skin over the course of the nerve. I have often observed this myself in a nerve which is just becoming the seat of leprosy; tapping it anywhere along its course makes the whole tingle; but the advanced cases have no such symptom, as soon as anæsthesia is established this hyperæsthesia of the nerve entirely subsides. It is frequently overlooked by the patients themselves, who, not dreaming of becoming subjects of such a disease, take little or no notice of this symptom at the time. At the commencement of the subsequent attacks in other extremities it is frequently present, and it was in them I first noticed it.

The second symptom is the gradual loss of sensation in the patch of skin affected. While this is in progress, if any part of the diseased patch be pricked or pinched it is felt not so much in the spot touched as in the whole patch.—(*Dr. Coates.*)

Jounpore.—The earliest symptoms the patients describe are a tingling and itching of the skin, followed by numbness, increasing to loss of sensation, and inability to feel a pinch or even a prick; a stuffed-up sensation in the nose similar to that experienced from a bad cold, the nose itself after a time becoming depressed and flattened. On examination patches of eruption are manifest, which become more or less developed; and in the black leprosy (Form No. 3), a hard, cracked, and fissured appearance of the skin of the fingers and toes; a shrivelling and falling away of the nails; a flexed position (as of clutching) of the fingers and toes, and inability to extend them, followed by ulceration, sloughing, and total loss of them.

Allahabad.—The tubercular and anæsthetic forms generally appear between puberty and middle age, but the white form is not uncommon in childhood. The earliest symptoms in the tubercular form are slight discolouration and thickening of the skin of the cheeks, nose, and ears, and loss of sensation in some small portion of skin in the anæsthetic form. White leprosy at its commencement has somewhat the appearance of common ringworm, then the epidermis falls off in thin minute scales, leaving the skin beneath of a snowy whiteness.

Loodiana.—In the tubercular form the first symptoms are erythematous eruption on the skin. In most cases the skin of the face is first attacked. In some there is sense of internal heat and fevers; in others there is no constitutional disturbance. The eruption is soon followed by thickening of the skin and development of tubercles along ridge of eyebrows, helix of ears, &c.; hair of eyebrows and often of eyelids falls off.

In seven out of 11 cases of the anæsthetic form the earliest symptom was anæsthesia in a patch of skin near the knee, ankle, or wrist-joints.

Ulwur.—The disease generally commences with tingling and loss of sensation, followed by or accompanied with a whitish hue of the skin. The absence of sensibility rapidly spreads from the general surface to the extremities. This whiteness may appear in the form of spots on the skin, though in most of the cases I have observed it has been uniform in appearance; the hair falls out in patches; after a time the loss of sensation becomes complete, the skin remaining cold, but in other respects unaffected, neither itchy, painful, perspirable, nor patch swollen.—(*Dr. Dickinson.*)

Nimar.—The earliest symptons observable are irregular patches of red discolouration of the skin, especially of that of the face, attended with heat, dryness, titillation, itchiness, and occasionally, formication; headache is frequent; also nausea, anorexia, and general languor; epistaxis is almost always complained of; a peculiar puffiness of the face, entirely altering its usual character, is observed, and gradual swelling of the nose, ears, &c., with incipient tubercular nodes takes place. In some cases after a few months many bullæ appear on the extremities, and are quickly followed by sloughing or interstitial absorption, but they are more frequently absent, and do not appear to be peculiarly noticeable in cases in which anæsthesia afterwards occurs.

The one constant early symptom is redness of the skin of the face. This is the first sign of the coming disease, and from it the natives unerringly predict the approaching affliction.

Bangalore.—In the tubercular form, the symptoms usually commence with heat, itching, and tingling of the face or hands or feet, the skin of which, particularly of the eyebrows, cheeks, about the alæ of the nose and the lobes of the ears, becomes thickened and rough and scabby, or thickened or glistening in patches, which have generally a lighter or more copper-coloured hue than the rest of the skin.

3.

At what period of life, and within what time, does the disease usually attain its full development? and at what period of life, and after what time, does it usually prove fatal?

New Brunswick.—"From the first invasion of the disease to its full development, seems to be from three to seven years; often much longer. The period of life and the time when it proves fatal very much."—(*Dr. Nicholson.*)

Jamaica.—"The full development of the disease and its common duration are much influenced by external circumstances. The anæsthetic form is more protracted in duration, and holds out a better chance of recovery than the tubercular, which in its confirmed stage is all but incurable."—(*Dr. Fiddes.*)

Montserrat.—"I have seen mutilation of the fingers and toes complete at eight or nine years of age; and I know of instances where the disease has remained stationary at the pigmental (so to call it), and the tubercular stages respectively, for from 12 to 20 years. The disease *per se* does not materially affect the duration of life; but the subjects of it succumb readily to other diseases, as remittent and intermittent fevers."—(*Dr. Steventon.*)

Barbadoes.—"When the disease is hereditary, it usually manifests itself at an early age, and runs its course before the adult period; but when it appears at a more advanced period, it usually terminates in death about the age of 50; occasionally, but rarely, it commences at a still later period of life."—(*Dr. Carrington.*)

Trinidad.—"Generally not until adult age, though sometimes in inveterate cases more rapidly. Patients are generally carried off by diarrhœa, or by extension of the disease into the air passages, between the age of 40 and 55."—(*Dr. Murray.*)

Guiana.—At whatever age the disease commences, it usually attains its full development in about 10 years. After the age of from 20 to 25 it begins its depredations, and usually proves fatal between 40 and 50 years of age. The tuberculous form progresses more rapidly than the "joint evil."—(*Dr. Reed.*)

"There is great difference in different cases. Lepers sometimes live to an advanced age. The children of leprous parents, although the disease may not have manifested itself in them, are less amenable to medical treatment for other maladies than the children of healthy parents."—(*Dr. Carney.*)

Cape of Good Hope.—"The disease in either form is slow in its progress. From three to five years usually elapse before the disease is fully developed; and although from 10 to 12

years may be usually the average duration of the life of a leper, I have known it prolonged to 16 or 18 years."—(*Dr. Abercrombie.*)

Damascus.—"It sometimes arrives at its height within a short time, varying from one to four or five years, and then proves fatal. In some cases it reaches a certain stage, and not progressing, the patient may live to old age."

Cyprus.—"At the leper house at Nicosia the disease often remains long stationary, the inmates not having the means of committing excesses, and abstaining generally from fat and oily food. When the disease appears about puberty, the patient seldom survives beyond 35 or 40 years of age."—(*Dr. White.*)

Crete.—"Leprosy is essentially a chronic disease; 10 or 12 years often pass before it is fully developed. Sometimes the symptoms cease for a time, more or less lengthened, afterwards to resume its course. Many patients attain an advanced age. I have seen a leper between 70 and 80 years of age, whose general health was not much affected."—(*Dr. Hjorth.*)

Corfu.—"In adults, generally six or eight years after the first symptoms; in rare cases, after three years. Many individuals die from want of the means of subsistence after the third or fourth year; others have lived on to 50."—(*Proto-Medico.*)

Mauritius.—"The period varies very much. I have known lepers live upwards of 30 years. In the anæsthetic form, I have seen the disease limited to the wasting of one arm for from 10 to 15 years without any progress of the malady or much disturbance of the health; others have lost several fingers or toes, the health still remaining good. The tuberculous form is rather more rapid in its course. Lepers die at every age, and after the greatest variety in the duration of the disease."—(*Dr. Regnaud.*)

Ceylon.—The anæsthetic form may last a whole lifetime, or to an old age, and the patient be carried off ultimately by some local affection unconnected with it.

The tuberculous form usually proves fatal within eight or 10 years from its development, though some cases last longer. This form unquestionably proves fatal much sooner than the others here enumerated.—(*T. A. P.*)

Bombay Presidency.—"As the two chief varieties of leprosy appear to be inimical to life in different degrees, the above questions are not susceptible of a precise reply; taking, however, the disease as a whole, its duration may, when not extensive, extend to upwards of 20 years; it is generally much less, 5, 10, or 15 years being perhaps the usual periods; but there is not to my knowledge, either a limited course, or a uniform termination, to the affection; much will depend upon the outward circumstances of the patient.

"I am of opinion that the tubercular form of leprosy soonest induces a fatal issue, evidencing, as I also think, a deeper taint than the more common, in India at least, viz., the anæsthetic form, in which life may continue for the longest of the periods named above. I have seen no case in which the eruption alone appeared to materially shorten life.—(*Dr. Stovell.*)

"In the town of Bombay the mortality seems to reach its maximum about 30 years of age. I have never witnessed what has been described as the acute form of tubercular leprosy."—(*Dr. Carter.*)

Dr. Shepherd, from inquiries among the native practitioners of Surat, writes:—"The majority labour under leprosy for 30 or 40 years before they die, so that, taking the age at which it first manifests itself to be from 15 to 20 years, and adding 30 or 40 years to that, the death-age will be between 45 and 60."

Madras Presidency.—The full development of the disease does not appear connected with any particular period of life, but depends rather on the period of its own commencement, irrespective of the age of the subject; thus, beginning in a child, the maturity of the disease may be reached long before the maturity of the patient (Van Someren). No death is recorded in the Leper Hospital, Madras, since 1855 under 20 years of age; and the following table shows the numbers and ages under each quinquennial period for the total deaths, viz., 183:—

20 to 25	25 to 30	30 to 35	35 to 40	40 to 45	45 to 50	50 to 55	55 to 60	Above 60	Total.
27	22	20	34	30	18	16	4	12	183

In about five or six years the disease attains its height; but in cases associated with scrofula and syphilis much sooner. Occasionally the disease remains stationary for years. After 10 or 12 years it generally proves fatal.

Bengal Presidency—Pooree.—The period at which the disease usually proves fatal is subject to much diversity, and depends much on the form of it, and the habits, constitutional peculiarities, and the means of good or bad living enjoyed by the individual. A great deal, in my opinion, depends on these two last circumstances; poor paupers and half-nourished individuals seeming to die much earlier than persons in little better positions of life, and who are thus able to indulge in more nutritious and wholesome articles of diet, though of course this does not always hold good.—(*Mr. Durant.*)

Furreedpoor.—The disease appears generally to attain its full majority during early manhood or about the age of from 30 to 40, and the time usually required for this purpose would seem to range from five to 15 years. But these things evidently depend very much upon the form of the disease which it assumes in particular cases; for instance, the sthenic varieties, such as the tubercular, mammilated, and rash forms, as a general rule, commence early, and arrive at the height of their development quickly; on the other hand, those of an asthenic character, as the chromatogenous and purely scaly kinds, not only appear late, but maturate at a comparatively more advanced period of life. Death generally takes place between the tenth and twentieth year of the attack, and the thirtieth and fiftieth of the age of the patient. Exceptions of course occur to both the above rules; I have seen a child affected with tubercular leprosy at the early age of eight years.—(*Dr. Bose.*)

Mozuffernuggur.—The result of an extensive inquiry under this head seems to show that dissolution rarely happens until after the disease has existed for some years, and the sufferer has passed the period of middle life. It appears also that the persons affected are, as a rule, carried off, not by the leprosy itself, but by the intervention of some secondary cause, chiefly diarrhœa and dysentry; and this coincides with what was observed in the Mozuffernuggur poor-house during the famine in 1860-61, at which time the lepers throughout the district, with other distressed persons, were collected together and fed by public charity for many months. On this occasion many of the lepers died from diseases of the bowels, and a few from cholera, but none appeared to sink from what might be termed the direct effects of the disease itself.

Nagpore.—Judging from the ages of those examined, I should infer that, in the anæsthetic and tubercular varieties, the period of life at which the disease usually attains its full development is from 20 to 40 years; and that, in the great majority, the time required ranges from one to 15 years.

Of those who die, many fall victims to chest and bowel complaints (to which they are liable), sink from exhaustion (in some the result of large absccesses), or commit suicide, which, considering their miserable condition, is not to be wondered at.—(*Dr. Hende.*)

Akyab.—The time occupied by the full development of the disease varies from a few months to many years, and the age at which it first breaks out is, I think, generally between 20 and 30; its duration, after full development, varies greatly likewise.

Some affected with it drag on a miserable existence, crippled in every limb, until old age; and ultimately fall victims to some other malady. Indeed, I think, such is the rule. I do not regard it as frequently fatal directly; and though it undoubtedly shortens life, it does so generally by making its victims more susceptible to other disease and less capable of withstanding them; it is never, I think, fatal in less than two years.—(*Mr. Nisbet.*)

4.

Is the disease more frequent in one sex than in the other? If so, in what proportion?

New Brunswick.—"I have seen 22 cases, of which 15 were in males and seven in females."—(*Dr. Bayard.*)

"There are at present in the leper hospital 14 males and eight females."—(*Dr. Nicholson.*)

Antigua.—It does not appear to be more frequent in one sex than in the other. In our lazaretto of 22 patients, 11 are of each sex. In a family of six children, two sons and two daughters were affected; one of each sex with the tubercular form, and the others with the anæsthetic.

St. Vincent.—It is most frequently seen among males, but the number of cases under observation is no criterion of the extent or prevalence of the disease. Every precaution is frequently taken to prevent its existence being known, and it may be that seclusion is more often and successfully carried out in the case of females.

Barbadoes.—There is no reason to believe that one sex is more liable than the other. Of the 45 patients in the lazaretto, 24 are males and 21 are females; 15 of the former and 11 of the latter are affected with the tubercular form, and nine of the former and 11 of the latter with the anæsthetic form.

Trinidad.—"During my 16 years' attendance at the leper asylum, there has always been an excess of male patients."—(*Dr. Saturnin.*)

"At the leper asylum there are more males than females; but, in my experience, females have come more frequently under my notice than males."—(*Dr. Murray.*)

Guiana.—"According to the number of lepers in the asylum, the disease is more frequent in males."—(*Dr. Reed.*)

"It prevails in both sexes; I do not think it is more frequent in one than in the other."—(*Dr. Van Holst.*)

Cape of Good Hope.—"As far as my observation goes, it is more frequent in males than in females, and probably in the proportion of two to one."—(*Dr. Abercrombie.*)

"Neither in South Africa nor in any part of India, eastern or western, have I noted that one sex is more liable than the other."—(*Dr. Ebden.*)

Sierra Leone.—About equal.

Scio.—There seems to be very little difference in this respect.

Crete.—More frequent in males.

Corfu.—"According to my experience, the proportion has been one fifth in males and four fifths in females."—(*Proto-Medico.*)

"In my notes, I find 17 cases in men to only two in females."—(*Dr. Tygaldos.*)

Cairo.—It is thought by native medical practitioners to be more common in the male sex; but this may be incorrect, as so little is known of female life among the Turks and Arabs.

Tabreez.—"I believe it is more frequent in men than in women."—(*Dr. Cormick.*)

Shanghae.—Of 75 cases seen by Dr. Henderson, only four were in women; and of these two only were well-marked cases.

Canton.—It is thought to be most prevalent in the male sex, but the difference is in any case slight.

Mauritius.—"It is seemingly more frequent in the male sex. Of 109 patients treated by me, 83 were males and 26 were females."—(*Dr. Regnaud.*)

"I have seen more males affected than females, but probably the latter keep themselves more secluded."—(*Mr. Ford.*)

Ceylon.—More frequent in men than in women. Owing to the absence of statistics on the subject I cannot state the proportion; but judging from the number of patients in the hospital of which I have the charge, I may state that men suffer from this disease in the proportion of 10 to 1.—(*T. G.*)

Bombay Presidency.—Dr. Carter says that males suffer much more frequently than females from the anæsthetic and tubercular forms, but that, judging from limited data, it is not so with the "baras." He gives the average proportion of males to females affected as 4 to 1; Mr. Shepherd as 10 to 1; Dr. Wyllie as 12 to 1.

In 12 years, in Bombay, 543 deaths from leprosy have been recorded; of these, 409 were in males and 134 in females.

Madras Presidency.—The disease is more frequent in males than in females in the lazaretto at Madras; 5·36 males were found for one female, and at Cochin 2·33 for one female.

Bengal Presidency.—"I am unable to speak positively on this point, from the great seclusion of the females of the better class in India;—the proportion of lepers is apparently much greater in males. I have known several native females affected, and also two European females."—(*Dr. Jackson.*)

Calcutta.—Out of 58 lepers examined by Mr. Stewart, 44 were males, 14 females.

Bancoorah.—It is more frequent in the female than the male; about two thirds of the lepers are of the female sex.

Moorshedabad.—Dr. Fleming thinks it is equally common in both sexes.

Raneegunge.—I do not think so, as, although we see more males affected, this I consider owing to the females being kept more at home, and seldom, if ever, coming for treatment.—(*Dr. Best.*)

Benares.—In the six reports sent in by the civil surgeons in the Benares circle, all agree in stating that it is more common in the male sex; and Dr. Garden gives some statistics, but they are not to be relied on, as females can and do conceal the disease, and are themselves

prevented from appearing in public when belonging to any but the lowest castes and poorer classes.—(*Dr. Dunbar.*)

Khatmandoo.—It is as common in one sex as in the other; but as women, when afflicted by this disease, usually keep themselves more secluded than the men do, it is not so common to see leprous women as leprous men in the public streets.

Malacca.—Much more frequent in the male. I have only seen, Mr. Rose says, two cases in the female; one a Chinese woman, the other the girl described in case 5.

Labuan.—Dr. M'Dougall writes, "I have seen only one case in a female who died of it "about the age of 40; she was a Dyak Chinese."

5.

Is it more frequent among certain races? among the white, the coloured, or the black population? and in what relative proportions?"

New Brunswick.—"It has been confined to the French population (in Tracadie), with the exception of four persons."—(*Dr. Nicholson.*)

The Lieutenant Governor states:—"At the present time it may be said to be confined to a "limited number of families of French extraction, living on the borders of the counties of "Gloucester and Northumberland, although, I believe there is authentic evidence of some "few English settlers having also fallen victims to this horrible malady.

"A great variety of conflicting opinions prevail as to the manner in which the disease was "introduced into the province."

Bahamas.—The disease is very common, and almost in equal proportion among the black and coloured classes. It is very rare amoug the whites of this colony.

Jamaica.—"As the disease occurs in Kingston, the different races composing the population "are not attacked in similar proportion. The population is in round numbers 30,000, com-"prising 16,000 negroes, 10,000 people of colour, 2,500 whites, and 1,500 Jews. The ratio "in which these races suffer from leprosy is nearly 1 per cent. in the Hebrew race, about 2 "per thousand in the dark races, and so much less is the liability among the white European "that I know of five cases only to have occurred among them during 15 years' practice in "the city. Of these five cases, three were in natives (creoles), one was born in St. Domingo, "and the fifth was an Englishman who had resided in Jamaica for 12 years before his "seizure. . . . Nearly all the Jewish residents, as well as the black and coloured in-"habitants, are natives of the island, or have lived long in it; whereas most of the other "class have been either born and reared in Europe, or are descended directly from an "ancestry that were so."—(*Dr. Fiddes.*)

"It is decidedly more frequent among the Jews than among any other races or classes. The well-to-do and the poor Jews suffer equally. Next to them come the coloured descendants of Jews, then the coloured races, then the blacks, next the creoles, *i.e.*, the descendants of Europeans, and, last of all, whites from Europe. As to the last named, I have heard only of one case. I am unable to state in what relative frequency the disease occurs. We have no reliable data."—(*Dr. Bowerbank.*)

St. Lucia.—It is most frequent among the blacks, next among the coloured, and least among the whites. The whites who are attacked are generally old creoles. The proportion of blacks affected to whites is about 12 to 1, and of coloured to whites 6 to 1.

St. Vincent.—"I have seen many cases in coloured and in black persons. I have also heard of cases in families claiming to be of exclusively European descent. In the latter circumstances, every effort is made to seclude the case as much as possible."

"It is well known that the Hebrew race, who can boast of purity of blood, are unusually liable to leprosy."—(*Dr. Sprott.*)

Barbadoes.—"There are more cases among the black population than among the white or coloured, not because the blacks are more predisposed to the disease, but owing to their being about three blacks to one white, and two blacks to one coloured, in the island."—(*Dr. Carrington.*)

"There are no reliable observations to show that the disease is more prevalent in one race than the other. In the lazaret, 27 are black, 18 coloured, and one white. But I am confident that it is far more prevalent among the whites than the above number indicates, the aversion to accept the charities of the institution being much greater in that race than in the others. The number, 18 among the coloured, would seem to point to a greater prevalence

among them than among the black, the relative proportion (according to the last census) being 9 coloured to 25 black, and the proportion among the inmates of the lazaret being 9 to 13."—(*Dr. Browne.*)

Trinidad.—"It is not. . . As a general observation, true leprosy is indigenous to certain latitudes, and attacks here principally natives of all denominations, black, white, and of mixed races; and although European residents are in a great measure exempt, instances occur among them when acclimatized, and their blood is impoverished by long residence."—(*Dr. Anderson.*)

Guiana.—

"Among the	white	-	about	4 per cent.
„	coloured	-	„	22 „
„	negroes	-	„	67 „
„	coolies	-	„	7 „

These figures are taken from the number of inmates in the asylum in 1862."—(*Dr. Reed.*)

"In this colony it is most frequent amongst the negroes and the Portuguese immigrants. A great number of coloured people are affected with it; it is very rare among the whites."—(*Dr. Duffey.*)

Cape of Good Hope.—"It occurs decidedly in the largest proportion among the Hottentots, next to them among the negroes, and last of all among the whites or Africanders. I have met with it in Europeans, but rarely."—(*Dr. Abercombie.*)

"In South Africa the Hottentots are far more liable than any other classes or races of man. Natives of the Mozambique sometimes suffer. Whites only rarely so. Black negroes do not suffer so much as the light copper-coloured Hottentots."—(*Dr. Ebden.*)

"Among the Hottentots more than any other race, from their proverbial want of cleanliness, and poorness of diet."—(*Colonial Medical Committee*, 1853.)

Cairo.—"In Egypt it is chiefly found among the Jews; next in frequency among the Copts; very seldom among the Arabs. The Bedouins are said to be free from the disease. On the whole the lighter coloured races seem to be most prone."—(*Consul Hay.*)

Damascus.—The disease is known chiefly amongst the poorer classes of the mountain peasantry, both Moslems and Christians. These may be called white races, being hardly as dark as the Italian peasantry; but no instance of its having occurred amongst the Jews of Syria, nor amongst the negroes, is known here.

Crete.—In its developed or aggravated form, it is much more frequent among the Greek population in Crete than among the other inhabitants. The form of the disease generally seen among the Moslem population is that of the "bouton d'Alep," known in Crete by the name of khaniotico.

Constantinople.—The cases seen at Constantinople occur among the Turks, Greeks, and Jews. No case has been observed among the Armenian poor, although they are subject to the same hygienic conditions as the poor of other races.

Mauritius.—"It is greatly more frequent in the Asiatic and African than in the European or Caucasian races. The lower the race the more prone it is to the disease, and to the severity of its attack. I have seen leprosy in Egypt and Arabia, in India, Ceylon, in the islands of St. Marie near Madagascar, in the Seychelles Archipelago, and in Bourbon and Mauritius, and I have met few cases of native-born Europeans affected; still they are liable to the disease after long residence in a country where it is endemic. In Mauritus and the dependency of Seychelles it exists in many white creole families, the descendants of Europeans."—(*Mr. Ford.*)

Ceylon.—It is unquestionably more prevalent among the black and coloured population than among the white; more frequent among the black or native races than among the coloured or Eurasian communities, and among the African and Arab tribes and their descendants than among the Singhalese or the original natives of the soil. During my experience of 26 years, I have not seen a single *European*, in the strictest sense of that term, suffering from the disease.—(*T. A .P.*)

Bombay Presidency.—Dr. Carter says that many data yet wanting would be required to answer this question, but that it may be said that no one of the indigenous race is exempt, while no one of them is especially liable. He further observes that the resident coloured population seems as much predisposed as the pure native, but that Jews are seldom attacked, and Europeans very seldom indeed.

Dr. Steinhauser's experience at Aden confirms Dr. Carter's statements as to the immunity enjoyed by Jews and Europeans, and tends to prove that leprosy is more common among the mixed negroid races than any others; Arabs, Somalees, Mussulmans (not Arabs) from India,

the far east of the Turkish dominions, and elsewhere, Hindoos, Parsees, and native Christians, who constitute the very mixed and fluctuating population of that place.

Madras Presidency.—The disease undoubtedly attacks all races, European, East Indians, Mussulmans, and Hindoos of all denominations, Brahmins as well as Pariahs.

It is, however, rare among Europeans. East Indians suffer considerably, though not so severely as natives, especially the lower orders.

Bengal Presidency.—" It is extremely rare for an European to be affected, and it is not very common among the Eurasians."—(*Dr. Jackson.*)

Calcutta.—It is confined almost entirely to the purely black population.

Raneegunge.—Decidedly more common amongst the native races of India, Burmah, and China than amongst the temporary residents, even making every allowance for their relative proportions; it it not rare among half breeds, especially the mildest variety; but I have been repeatedly asked, says Dr. Best, to prescribe for leprosy, among this class, which was decidedly secondary syphilitic disease.

Benares.—" Dr. Cheke states that he has seen cases in Europeans, but none of the other observers have, nor have I.

" Dr. Garden has seen one marked case in an Eurasian. Dr. Cheke says in a general way he has seen cases in Eurasians, but none of the others have.

" I have seen leprosy only among natives "—(*Dr. Dunbar.*)

Cawnpore.—I think more frequent among Mahomedans than Hindoos. It is much more common among the very poor, but the richest do not escape; one of the reigning rajahs has it now. It appears never to occur amongst Europeans in this country. The sub-assistant surgeon at this station informs me that he has met with it in Eurasians, but it is very rare in any but the black population. —(*Dr. Jones.*)

Agra.—" The disease is more frequent among Hindoos than Mussulmen; the relative proportion is 15 to one."—(*Meer Ushruff Ally.*)

Nagpore.—All the cases I have met with, Dr. Hende says, have been in natives.

The following table shows their distribution among the different castes:

Description.	Sex.	
	Males.	Females.
Tubercular and Anæsthetic.		
Brahmins	8	2
Hindoos	111	54
Mahomedans	19	9
Dhers, or low-caste Hindoos	15	10
Total	153	75

Bangalore.—The disease is confined almost exclusively to the native and coloured races, and it is comparatively rare among the latter. I have only observed two instances of it in Europeans, in one of whom the tubercular form was developed when an elderly man. In the other, who was a young man, but born and bred in the country, the disease was of the anæsthetic or ulcerative variety.

Mussulmans seem as liable to it as the Hindoo.—(*Dr. Kirkpatrick.*)

Singapore, &c.—In these settlements the Chinese most frequently suffer from the disease; next the Malays. I have only seen one case amongst the Klings (natives from the Madras coast), and only one in an European, described in case 7.—(*Mr. Rose.*)

Dr. M'Dougall writes, " In Sarawak, I think, the Chinese are more affected than either " Dyaks or Malays; I have seen at least 50 or 60 cases in males of these races, but the " greater number have been Chinese."

6.

In what condition of society is the disease of most frequent occurrence, and what are the circumstances which seem to favour its development in individuals, or in groups of individuals?

Please to enumerate these circumstances under the following heads:

a. The characters of the place or district where the disease most frequently occurs in respect of its being urban or rural, on the seacoast or inland, low, damp, and malarial, or hilly and dry.

b. The sanitary condition of the dwellings, and of their immediate neighbourhood.
c. The habits of life as to personal cleanliness or otherwise.
d. The ordinary diet and general way of living.
e. The occupation or employment.

New Brunswick.—The disease is entirely confined to the poor, who live in rude log huts, hardly sufficient to protect themselves from the inclemency of the weather. Usually there is but one room, which is occupied by pigs, poultry, &c., as well as by the family. They are poorly clad, and all around them betokens the most abject poverty. Their habits are indolent, improvident, and extremely unclean. In the winter months their diet consists solely of salt herrings, salt and dried codfish, and potatoes, at times salt pork; in summer they live on fresh fish; they have very little bread. They are chiefly employed in fishing, farming, and lumbering.—(*Dr. Nicholson.*)

"The dwellings, consisting generally of one room, are in winter heated to a very high temperature with close stoves, badly ventilated, and unclean. The ordinary diet is fish, which is frequently offensive from decomposition. Eel soup, thickened with barley, is a favourite dish.

"Occupation—fishermen during the catch; agriculture is shamefully neglected; lumbering their winter employment. Habits indolent. A fine agricultural country neglected."—(*Dr. Bayard.*)

Jamaica.—"It is more common on the sea-shore and on the flat inland districts than in the hilly and mountainous regions."—(*Dr. Fiddes.*)

"The disease appears among all classes, among the well off and those that are not. It has always appeared to me to be more frequent on the sea-coast, but we have no data.

"The dews and coloured people generally consume a large quantity of fresh, and also salted and kippered fish. The lower classes often consume salted fish in an offensive state.

"Persons of all trades and occupations are attacked."—(*Dr. Bowerbank.*)

St. Lucia.—Leprosy is most frequently observed in low, damp, and swampy localities, either on the sea-coast or inland.

The sanitary condition of the dwellings of poor lepers is generally as bad as it can be. The habits of the people are not conducive to healthy existence. Their diet is mostly vegetable; salt fish is the most general animal food they have.

I am not aware of a single case of leprosy occurring among the more comfortable class of the population. The patients are all of the lowest and poorest of the people.—(*Dr. Gardiner.*)

St. Vincent.—More cases are seen in the towns than in the rural districts, because they come to the former for charity.

Some live under the public galleries on heaps of rags, protected from the wind by the skins of oxen; others in wooden hovels on the beach. A few anæsthetic cases are provided for in the almshouse in connection with the Colonial Hospital.

Living on charity, they must take what they can get.

None, unless practising on the superstitious fears of the ignorant by obeah arts.

Barbadoes.—"It attacks unsparingly the higher and the lower classes. It shows itself in all parts of the island; in towns, rural districts, on the sea-coast, and inland; in low damp situations and on dry hills. It develops itself in the best dwelling as well as in the most humble cottage. There can scarcely be a doubt but that cleanliness must retard the spread of leprosy. I do not think it is influenced by diet."—(*Dr. Carrington.*)

"No condition of society is exempt; nevertheless, the disease is comparatively rare among the wealthy. I have ever been at a loss to ascribe its development to those conditions or circumstances referred to, nor have I observed that it is more frequent in one locality than another. Although want of cleanliness may occasionally aggravate the disease, I could never directly trace it to that cause alone."—(*Dr. Goding.*)

Trinidad.—"Among the indigent. It is necessary, however, to say that it is difficult to trace the number of cases among the upper classes, as families will seldom apply for medical advice through a sense of shame. The circumstances which favour its development are:—

a. Low marshy districts, exposed to malaria, both in town and country.

b. Badly ventilated habitations. The higher classes, residing in comfortable houses, are less subject to it.

c. Neglect of personal cleanliness.

d. Deficient and innutrituous food. The poor live much on tainted fish, and vegetables such as plantains, yams, &c."—(*Dr. Saturnin.*)

Guiana.—"The inhabitants of British Guiana mostly live on the sea-coast, which is alluvial soil, low, damp, and malarial. The villages of the negroes and coloured people are undrained, and no attention whatever is paid to sanitary measures. In these villages leprosy prevails. In George Town, the capital of the colony, lepers are numerous; I attribute this to the facility of obtaining charitable relief. The mass of the population live on vegetables, as plantains, tanias, cassava, salt fish, and salt pork. The general occupation is agricultural."—(*Dr. Reed.*)

"Low, damp, and malarial localities seem to favour the disease; filth and bad diet certainly aid it."—(*Dr. Van Holst.*)

Cape of Good Hope.—"It does not appear to occur more frequently in any particular locality. The dwellings of the poor, among whom it chiefly occurs, are badly constructed, ill ventilated, and cold. Their habits are filthy, and their food is often innutritious, consisting much of salted fish.

"In the few cases of the disease I have seen in whites and Europeans, their habits had been cleanly, and their food good and nutritious."—(*Dr. Abercombie.*)

"The Hottentots usually reside away from the sea, in open valleys, high and dry, not liable to malaria. Animal food is not scarce, but fruits and vegetables are so amongst Hottentots, who rarely wash their bodies or their clothes."—(*Dr. Ebden.*)

Cairo.—Most frequently amongst the very poor.

a. Close, confined, and damp parts of the city.

b. The houses very much confined; not receiving much light; noxious effluvia in almost every direction.

c. Habits dirty in the extreme.

d. Ordinary diet, salted and often almost putrid fish, vegetables, and bread, seldom eating good animal food.

e. Scribes and money changers.

Jerusalem.—There is nothing remarkable before the development of the disease; afterwards all lepers live by begging.

This is a healthy climate. The patients have not an unhappy appearance; they are only disgusting to public notice. Some have a little property invested in baggage animals, and they themselves bring in wood, charcoal, &c. to the city.

Damascus.—It is found chiefly amongst the poorer peasantry, but members of the richer classes of mountaineers are also sometimes attacked by it. It is not known to have attacked the townspeople of Damascus, nor of the other large towns in Syria.

a. The districts most subject to it are highlands, table-lands, such as the mountains of Lebanon and Anti-Lebanon, and the Haurân, and very rarely on the sea-coast.

b. The peasants' dwellings are built and maintained without the slightest regard to sanitary rules. Animals of all kinds frequently share the one room of which the house consists, with the owner, his family, and guests. Dustheaps and dunghills are formed in any open space near the houses.

c. Their habits of life are dirty in the extreme.

d. Their ordinary diet is, in the daytime, bread with cheese, olives or other fruit; and in the evening, boiled rice, lentils, or wheat, with butter or oil and sour milk, and meat but rarely. They can go for a very long time on little or no food, and eat inordinately when they get an opportunity of doing so at another's expense.

e. Their ordinary occupation is agriculture, wood-cutting, charcoal or lime burning, mule or camel driving, and tending sheep or goats.

In the diet of the poor, in *Aleppo*, salted and cured meats are enumerated.

Crete.—Dr. Hjorth, who considers that bad diet is one of the principal if not the main element in the development and aggravation of leprosy, remarks: "In consequence of the "numerous fasts of the oriental church, coupled with the neglect of agricultural pursuits, the "Cretan peasant seldom or ever makes use of fresh meat, butter, or fresh vegetables, with the "exception of some of inferior kind. Their food consists of a large quantity of bad salt fish, "barley bread, and of an enormous quantity of olive oil, often rancid, which they will drink "like water. In many places there is a want of good water; it is often brackish, and in the "mountain districts, from which a large number of the lepers come, it is derived from the "melting of the snow."

Dr. Mongeri confirms the statements and appears to agree in the opinion of Dr. Hjorth, that the large consumption of semi-putrid salt fish and pork, coupled with the total neglect of personal cleanliness, has much to do with the development of leprosy. During the frequent fasts of their church, the poor Greeks live almost entirely on vegetables and oil, often of a bad quality.

Ionian Islands.—"With one exception, all my cases have occurred among peasants, and without one exception among the poor and miserable. I have seen some lepers in villages situated

on more or less arid hills (Cephalonia); others living in swampy clayey localities (Lepkimo in Corfu); others residing in calcareous districts (Karoussades in Corfu), in low, damp, ill-ventilated, and ill-lighted dwellings, surrounded with heaps of putrescent filth. At Zante the diet of the lepers I saw consisted chiefly of wheaten bread, at Cephalonia of barley bread, and at Corfu of bread of Indian corn, with vegetables, olive oil, salted fish, but rarely any fresh meat."—(*Dr. Tygaldos.*)

Tabreez.—Disease most frequent among the poor. Dr. Cormick has never known a leper among the upper classes.

a. It is more frequent in rural districts where poor living and constant exposure to cold and damp are undergone. Is said by the consul to be especially prevalent in Zenjan, a small ruinous town in the north of Persia, situated in a dry sterile plain half way between Tabreez and Teheran. Exists also in other elevated dry districts with severe winters, but is believed by the consul to be unknown in the dampest regions of Persia, namely, those lying on the Caspian.

b. The habitations in Zenjan are of the meanest description, and the inhabitants exceedingly poor.

c. The lower classes are very uncleanly in their personal habits.

d. The ordinary diet of the poor consists of milk, sour curds, cheese much salted, and bread. Dr. Cormick says cooked dishes are rare among them, and in some parts vegetable diet rarer still; probably salt is seldom used.

Shanghae.—In this province leprosy seems entirely confined to the lower classes. Dr. Henderson has seen three cases in Buddhist priests.

a. The country for 30 miles round Shanghae is flat, the soil alluvial, the climate damp and relaxing. The country is intersected by small ditches and canals, and there is much stagnant water, with many paddy fields. Leprosy not more common on the sea-coast than inland.

b. The dwellings are mere hovels, all on the ground floor, which is not elevated. They are essentially dark and damp, many of them formed of bamboo and mud.

c. Personal and domestic habits extremely filthy; indeed a majority of all classes affected with some sort of cutaneous disease.

d. There can be little doubt that bad, insufficient, ill-prepared food is the chief cause of leprosy. The food of the people consists chiefly of rice and vegetables; the lower classes eat large numbers of small crabs which abound in the ponds and ditches; what animal food they have seems ill-prepared, and they use very little salt with their food.

So far as Dr. Henderson has been able to learn, those affected with leprosy have been much exposed to malarious influences; have been insufficiently clad, never changing their clothes or removing them by night; have been living on bad stale food, any animal food they had being badly nourished, and often in a state of decomposition.

Mauritius.—"It is equally prevalent in all ranks of society.

"The only circumstances which have seemed to me to favour its development are—1. Residence in the most arid, least elevated, and the hottest parts of the island, and particularly on the sea-coast. 2. The little use made of cold water, the want of cleanliness, and the weakening of the system by hot baths."—(*Dr. Regnaud.*)

"It is most frequent in the lower conditions of society, and on the sea-coast of large countries and in small islands."—(*Mr. Ford.*)

Ceylon.—Poverty, filth, damp, bad water, and whatever induces general cachexia, are circumstances, I think, that favour the development of leprosy when excited by a specific influence—malarial.—(*H. D.*)

It is more frequent to the maritime districts and the fishing coasts.

It is seldom seen in the inland and hilly districts; more in the urban than in the rural provinces. It is prevalent in the low damp and malarious districts.

An entirely fish or salt-fish diet, and want of cleanliness, invariably occur among the natives who are subject to the disease.—(*T. A. P.*)

Bombay Presidency.—The unanimous testimony is that the lower orders are the portion of society in which the disease is of most frequent occurrence.

a. Dr. Carter says the greater number of lepers are inhabitants of small hamlets or rural districts, but many also of towns. The districts are mostly, but not exclusively, on the seaboard. The disease is not limited to low altitudes. He further observes that most of the localities where leprosy now prevails are hot and damp, and Drs. Wyllie and Steinhaeuser add, malarious.

b. All the observers are agreed that the sanitary condition of the dwellings of lepers and of their immediate neighbourhood is not favourable to good health, but not different in any way from that of Indian rural places generally.

c. The same remark applies to the query about their habits of life as to cleanliness.

d. Some of the observers make the same reply to this question; but there seems to be an impression on the minds of Dr. Carter and Messrs. Steinhaeuser and Shepherd that there is some foundation for the popular idea that a diet chiefly composed of milk and fish tends to produce the disease. Dr. Steinhaeuser states that under this idea the Somalee tribes, among whom he has seen cases of the disease, never eat fish under any circumstances. In addition to milk and fish, bad grain and oil are spoken of by Mr. Shepherd as predisponents to the disease.

e. All seem to agree with Dr. Carter's remark, that the occupation or employments of lepers will be found not to have exercised any influence in producing the disease.

Madras Presidency.—The disease is unquestionably most rife among the poorer and lower orders residing in the sea-coast towns, which are low and damp, though it is by no means unknown in inland, rural, and even in hilly districts. . . . All the reporters are unanimous in pronouncing the dwellings of those afflicted with leprosy as generally extremely filthy and defective in all sanitary requirements. In Cochin, the disease is said by Mr. Day to be most prevalent among the soil slave caste, who live in wretched hovels, and may be said to be more like cattle than human beings in the way they are fed and treated; filthy in the extreme, devoid of morality and almost of common decency.

On the western coast of the Peninsula, leprosy prevails to a great extent. By some writers this is attributed to the dampness of the climate and to the diet of the better classes consisting almost entirely of fish and rice, whilst the poorer live upon the flesh of enormous sharks and other coarse fish, frequently in a state of putrescence; yet in Burmah the disease is rare compared with the western coast of India, although the climates are in many respects similar as regards humidity and rain, and the inhabitants subsist almost entirely on putrid fish and rice with condiments.

Bengal Presidency.—"The disease is most frequent in the lowest class, especially the fishermen, who chiefly live upon fish, and that in a semi-putrid state."—(*Dr. Jackson.*)

Pooree.—It is chiefly confined to the poorer people, and to those who are either pilgrims, having come from other and remote parts of India, bringing the disease with them, or to the ill-fed, and those who live in low and squalid habitations, where vice and filth of every description is rife. The rich and well-to-do also, in some instances, are the subjects of it. A good case in illustration of this occurred a few years ago in that of the late Rajah of Pooree, who died from it at the age of 25, a confirmed leper. The unfortunate victims of it are generally to be seen wandering about the streets and native bazaars, begging for sustenance from door to door, objects alike of pity and disgust from the hideous deformities presented by many of them.

The people are generally, with a few exceptions, such as the highest caste Brahmins and those nearly allied to them, dirty and uncleanly, seldom even washing their bodies, and wearing the same clothes till they nearly drop off. This is particularly the case with the poor and labouring classes, who, from poverty and lazy habits bred up from infancy, are the worst. In addition to these habits, they adopt another equally dirty practice, *i.e.*, of anointing the whole of the body with a mixture of turmeric powder and mustard oil, which they do with the idea that it acts as a safeguard against cold and rheumatism.

The ordinary diet of the poor people chiefly consists of boiled rice, vegetable curry, or fish, either fresh or dried, with a very few condimentary spices, and a little mustard or castor oil in place of butter or ghee.

Beerbhoun.—The food is of the poorest, often of the most unwholesome and innutritious description, exclusively vegetable, consisting for the most part of the coarsest kind of rice, to which is added, by those who can afford it, a small portion of the poorest and least nutritious pulse and green vegetable, and is often eaten without salt; or if this article is procurable, it is always largely mixed with dirt, and I fear often adulterated with something still more prejudicial to health; other condiments, particularly of the warm class, so essential to a rice-eating people, are almost unknown to the poorer classes of the people. Those articles of diet, particularly the pulse, are often damaged from damp or other causes; and to the use of this article in this state inveterate cutaneous eruptions have been ascribed; even to some kinds of this article in a sound condition, and which from their cheapness are almost exclusively used by the most indigent, similar and even deleterious effects are attributed. The food thus used by the most indigent classes may be said to be of a most unwholesome and innutritious character.—(*Mr. Sheridan.*)

Dr. Best, of Raneegunge, remarks:—

"Among the poorer classes of this district, the cheap kesaree dâl is much used, and I cannot help remarking that the symptoms of its noxious influence much resemble some of the primary manifestations of leprosy. Thus we have pain and weakness of the knees and ankles, burning of the hands and feet, general feverishness, pain at the pit of the stomach, and, if persevered in, we have scaly eruptions of the skin and pains all over the body."

Cuttack.—All agree in saying that the eating of fish increases the disease; and it is only when they have given up all idea of being cured that they become callous, and make it an article of diet.

Furreedpoor.—The people of this district are extremely fond of fish, which abound everywhere, and of which they are great eaters; "but I do not see," says Dr. Bose, "that they are on that account the more subject to the disease than their less piscivorous brethren in the neighbouring districts."

Bhaugulpore.—It occurs most frequently in the poorer classes, and is most common amongst the beggars in this country.

Their ordinary diet consists of vegetables and rice, and now and then fish, which is generally eaten when it is almost putrid. It is thought by the natives that leprosy is caused by eating bad rice; but I cannot give a decided opinion on this subject; but there is no doubt but that diseased rice, which the poorer class frequently eat, has a very detrimental effect upon the constitution.—(*Mr. Crewe.*)

Monghyr.—The natives here have an impression that oily aliments and fish diet favour the development of the disease.

Benares.—"None of the reporters have any means of giving precise answers to this interrogatory. Leprosy does not seem to be confined to any one locality more than another. The dwellings of the natives are all equally wanting in sanitation; the poorer classes are generally more dirty. But leprosy seems to be affected more by the diet and mode of living than by any other cause; but, nevertheless, men in good circumstances, able to afford not only the necessaries, but also the luxuries of life, become affected with leprosy. These have, however, most generally the disease in its third form."—(*Dr. Dunbar.*)

"This disease exists most among the poor ill-fed classes, but also among the rich; and in these cases I believe a venereal taint is the primary cause."—(*Dr. Cheke.*)

Meerut.—"In the lower classes of society it is very frequently observable, particularly in those who are accustomed to eat putrid fish and meat, and other unwholesome food, &c. &c. Inhabitants of low and damp localities are more subject to the disease; and other circumstances, such as dirty habits of life, living in low, dark, and ill-ventilated huts, &c., accelerate the development of the disease."—(*Nund Coomar Mitter.*)

Seharunpore.—The dwellings of the pupulation at large are of a most wretched description. The towns are still worse than the villages. Any one in the habit of treading their narrow confined streets, and inhaling the peculiar nauseating effluvia emanating from them, must wonder how it comes to pass that the people are not extinguished altogether by plague and zymotic diseases of every kind. The state of native dwellings is a vastly important one, well worthy of the earnest attention and consideration of Government. From the want of energetic and systematic sanitary arrangements spring, I believe, those frequent and violent epidemics so peculiar to eastern countries.

The inhabitants wear the same clothes day and night, and wear them, too, till they drop off from sheer age. During the hot months they require but little covering; not so, however, when the temperature falls to near freezing point. They may then be seen going about shaking in every limb, and, as a natural consequence, they suffer from rheumatism, bowel and pulmonary complaints.—(*Dr. Puske.*)

Hill States.—The greater number of persons affected with leprosy whom I have seen belonged to the very lowest and poorest classes, and the circumstances which seem to favour its development among them are the badness of the food they eat, and their extremely filthy habits.

The filthy state of the houses inhabited by this class is almost beyond belief. The immediate neighbourhood of their houses is also always extremely dirty; heaps of manure, human ordure, and filth of all kinds are allowed to collect and remain here for lengthened periods, and never thoroughly cleared away.

Their diet is of the coarsest description, being usually a grain called "bathoo," from which they make bread that is nearly black. This is imperfectly cooked, and eaten unleavened. Poppy seed and salt is often mixed with it. They are very fond of salt, and eat it in large quantities. It is of an inferior quality, being the dark grey rock salt.—(*Mr. Garden.*)

Indore.—It is very evident that poverty, hunger, and dirt will invite its development and foster its growth, as they will the proclivity to any other disease, and that lepers will, like other outcast mendicants, have to wage a constant war against starvation. As for employment, they all become beggars as soon as the disease breaks out, when they seem always to leave their ordinary employment, and to wend their way to large towns and cities, where mendicancy is most profitable.

Bundelkund.—Most frequently among the poor, but it affects all classes. Deficient, or probably still more, unsound articles of food.

The latter may account for the disease where the former, *i.e.*, deficient nourishment, cannot be the cause. It might be a point of inquiry whether there is any connexion or parallelism of cause between leprosy in its gangrenous or other forms and the diseases, including gangrene of the extremities, produced by the use of diseased grain, such as "ergot."

Bangalore.—No castes of the native community seem exempt from the disease. I have met with many instances of it among the Brahmims, both male and female, whose habits of personal cleanliness are most scrupulous; but I think it is more common still among the lowest classes of the native community, with whom impurity of living in every respect is the normal condition.—(*Dr. Kirkpatrick.*)

Akyab.—The poorer classes, who are decidedly the greatest sufferers from the disease, use both tank and river water for drinking as well as for bathing long after it has become, by its foul appearance and odour, an abomination to the senses of the more delicately constituted European.

d. Their ordinary diet is rice and dâll, vegetables, spices, and oil or ghee, a sort of butter made from buffalo's milk, and fish; no meat, except goat's flesh, and that they partake of sparingly and seldom.

They dwell in huts made of bamboo and leaves, which are impervious to rain, and unexceptionable as regards ventilation, since though the windows are few and small, they are unglazed, and the walls being of mats permit free circulation of air throughout the dwellings. The floors are of mud, beaten into a plaster, laid smooth, and raised from the ground two or three feet.

They are fond of anointing one another with mustard oil, and seem to economise clothing by the practice.

7.

What conditions or circumstances of life seem to accelerate or aggravate the disease when it has once manifested itself in an individual?

New Brunswick.—"Poor diet, want of cleanliness, scanty clothing, and exposure."—(*Dr. Gordon.*)

"Many of the lepers in the lazeretto thought their disease was aggravated by their imprisonment on Shildrake island."—(*Dr. Bayard.*)

Bahamas.—I have a strong opinion that the poor diet generally of the lower classes, and the frequent use of fish and pork, increase the tendency to its development in the hereditarily predisposed.—(*Dr. Chipman.*)

Guiana.—"Among the cases I have seen, it was clear that the comforts of life, coupled with hygienic regulations, arrested for a time, not seldom short, the march of the disease, without however ultimately preventing the fatal result. On the contrary, unwholesome and insufficient food, and ill-ventilated and crowded damp dwellings, together with dissipation of all kinds, evidently accelerate its progress."—(*Dr. Manget.*)

Barbadoes.—"It is doubtless accelerated and aggravated by whatever tends to lower the vital powers. When it appears in one who has the ordinary necessaries and comforts of life, it may not only be protracted for many years, but he may even be able to exercise some useful employment."—(*Dr. Clarke.*)

Trinadad.—"The almost entire use of salted meat and fish, and the abuse of spirituous liquors, as is the case in country districts, where fresh meat is seldom to be found; also the insufficient supply of food."—(*Dr. Saturnin.*)

"Uncleanliness, overcrowding, bad and insufficient food, and general poverty and distress; in a word, everything tending to depress the vital powers."—(*Dr. Murray.*)

Montserrat.—"My opinion is that leprosy is a manifestation of the scrofulous diathesis, and that it is to the adoption of the general measures acknowledged to be mitigatory of this diathesis that we must look for the prevention of the development of the disease."—*Dr. Steventon.*)

Cape of Good Hope.—"Its progress is, I think, much slower among those who have the means of cleanliness and good diet at their command than among the poor and destitute."—(*Dr. Abercrombie.*)

Damascus.—An irregular mode of life and want of cleanliness aggravate the disease; and lepers have assured me, from their own sad experience, that oil taken in cookery or in salad causes great pain, and an increase of the disease. Sexual intercourse seems to have the same effect.

Rhodes.—Mental depression especially, often arising from the enforced separation from their families and friends, and being obliged to live with other leprous persons.

Smyrna.—Bad food and general mal-hygienic conditions.

Mauritius.—"Poverty, close unwholesome dwellings, want of cleanliness and pure air, unwholesome food, as too much of fish, and above all of pork, especially its grease (of which large quantities from pigs that feed on all kinds of offal are imported from Calcutta into Mauritius), tend to accelerate and aggravate the disease when manifested."—(*Mr. Ford.*)

Ceylon.—Poverty, want of cleanliness, coarse and unwholesome food, syphilis, sexual excesses, and all depressing agencies undoubtedly tend to aggravate and accelerate the disease.

The natives believe that the too frequent use of pork as a diet, as well as certain kinds of fish and fruits, either excite or predispose to, and when once formed aggravate the disease.

I unhesitatingly believe that the frequent living upon an entirely fish diet, the fish being of an unwholesome kind, frequently putrid and badly cured, such as the native races often subsist upon, often excites the disease in those who are predisposed to it.—(*T. A. P.*)

Bombay Presidency.—"Leprosy should be viewed as a cachexia of the system, or dyscrasia comparable in some particulars to syphilis or the strumous; it may therefore be said that depressing or deteriorating influences generally will hasten the progress of the disease. It so happens that the poorer lepers are mercilessly exposed by their friends to exposure and want, and hence, no doubt, it is amongst them we find revealed the most lamentable effects of the disease."—(*Dr. Carter.*)

Madras Presidency.—"The progress of this disease is certainly retarded by improving the hygienic condition of the sufferers, as regards cleanliness, ventilation, and food; and I infer that the liability to contract it might be diminished by the same process."—(*Dr. Innes.*)

Poverty, low living, hardship, filthy habits, and debauchery aggravate and accelerate the disease when once it has manifested itself.

Bengal Presidency—Bancoorah.—If a man suffering from leprosy, but "well to do," is suddenly reduced to want, the disease is augmented; whereas on the other hand, if the poor and needy are taken care of, washed, clothed, and well fed, the malady seems to be arrested in its ravages; if not altogether, certainly its progress is less rapid.

Pooree.—Poverty, excess of bodily labour, deprivations or distresses of any kind, chiefly those caused by long journeys or pilgrimages to Juggurnauth, insufficient nourishment, absorption of impure airs, such as from living in unhealthy localities, confined habitations, &c., lying out in the open air, and exposure to inclemencies of season, chiefly during the monsoons and cold weather; indulgence in intoxicating drugs, such as the preparations of hemp and opium; dissipations of all kinds, particularly excess of venery (as was the case with the late Rajah of Pooree, who, as I said before, died from this disease and syphilis at an early age), want of proper medical and other hygienic means, and the abuse of remedies, such as mercury, which is sometimes prescribed by the ignorant quacks in the early stages of the disease, mistaking it for syphilis, not to mention the existence of a scrofulous or syphilitic taint; these then seem to be the most common aggravating circumstances of the disease as I have seen it among the people here.—(*Mr. Durant.*)

Furruckabad.—It would appear that poor living, a fish diet, want of cleanliness, insufficient clothing, and exposure to the heat of the sun accelerate and aggravate the disease when once formed.

Khatmandoo.—The circumstances apparently most favourable to its development, and which seem to aggravate the disease when once established, are all such causes as tend to impo-

verish the blood and lower the state of the health generally; such as bad food, insufficient clothing; damp, dirty, and ill-ventilated dwellings; personal uncleanliness; to which may be added constitutional tendency to it, and a system broken down by syphilis and the imprudent use of mercury; most of which conditions are nearly universal among the poorer classes in Nipal.

Akyab.—The stigma which attaches to sufferers from this disease, and the depression of spirits arising therefrom, have, I have no doubt, much influence in aggravating their malady when once fairly and unmistakeably established. I have known lepers lie in one spot for months, hardly rising to take their food, under the influence of this feeling, and the supineness and torpidity which characterise the disease.—(*Mr. Nisbet.*)

8.

Does the disease appear often to be hereditary?

Have you known instances where one member only of a family has been affected while all the other members remained free from any trace of it?

New Brunswick.—"It is certainly hereditary.

"The cases I have reported establish the fact that the disease may attack one or two members of a family, while the others remain exempt. Leprous parents suffering for many years under ulcerated tubercles, with destruction of the fingers and toes, have had families in whom the disease had not appeared when I saw them."—(*Dr. Bayard.*)

"I have known numerous instances where one member of a family has been affected, while all the others remained quite free from any trace of it."—(*Dr. Nicholson.*)

Jamaica.—"It is frequently hereditary, particularly in the third generation. I have known several instances where one member of a family only has suffered; but the instances are more common of several members of a family being afflicted."—(*Dr. Fiddes.*)

Dominica.—My belief is that leprosy is hereditary, though I am not prepared to assert that the disease may not occur from causes independent of hereditary predisposition.

It is difficult to answer the second query with certainty. I have known instances where only one member of a family has been affected while the others remained free at the *time.* But as I believe that the disease may appear at any age, it would be necessary to carry the period of observation over the lives of each individual member of a family, in order to determine the point with precision.—(*Dr. Imray.*)

Barbadoes.—"It does appear to be hereditary, but I cannot say often so. There are many in the lazaret who have father and mother free from the disease; and I know a white person in middle life, a mother of a numerous family, affected with the anæsthetic form of the disease, in whom it manifested itself at the cessation of child-bearing, whose entire family remains free, and whose father and mother were not affected."—(*Dr. Browne.*)

"There can be no doubt of its being hereditary. Frequently, however, one member will be attacked and the others escape; but very commonly the offspring of those members who escaped will be attacked with it in its worst form."—(*Dr. Stevenson.*)

Guiana.—"It is undoubtedly hereditary.

"Sometimes all the children of diseased parents are affected, at other times one or two only, while the other members entirely escape. The disease often overleaps an entire generation to reappear in the next; the immunity may commence in the immediate family of the leper himself. It is possible that many cases presumed to be of hereditary origin are instances either of extraneous contamination, or of the propagation of the disease from one member of a particular family to the others."—(*Dr. Pollard.*)

Cape of Good Hope.—"Most decidedly hereditary. I have known instances where one member only was afflicted, and then the disease has appeared to pass away from that family."—(*Dr Ebden.*)

Sierra Leone.—Invariably, as far as I can ascertain; it generally skips a generation.—(*Mr. Bradshaw.*)

Damascus.—Often one member only of a family is attacked. Few lepers have children; but when they have, some of the children are diseased, and others are not.

Samos.—Yes, certainly. The form of the disease transmitted to offspring is not always that of the parent. One child may be affected with the tubercular form and another with the articular or diérétic form, the father or mother having the tubercular disease. This fact alone shows that tubercles are not a necessary or essential feature of the morbid state.

Constantinople.—Yes, certainly; yet it often appears spontaneously. Sometimes, one member only of a family is affected.

Canton.—"Leprosy is undoubtedly a hereditary disease. It is said to become mild in the third generation, and to run itself out in the fourth. The children of leprous parents are at once recognised by the coarse thickened expression of the features, a broad nose, large ears, and a dry shrivelled skin on the arms and legs. The Chinese never permit any marriages with the progeny of leprous parents. Its appearance in a family not supposed to have any hereditary predisposition or taint puts an effectual stop to all matrimonial engagements, and makes null and void all previous bonds of betrothment. The lepers themselves usually intermarry only with those of the same grade or type of disease; *e.g.*, a leper of the fourth generation with no external appearance, but known to be of leprous origin, will only marry a woman who is in the same circumstances with himself. Their progeny is considered free from taint, and need no longer be secluded from society."—(*Dr. Hobson.*)

Mauritius.—"Unequivocally so. Sometimes certain members of a leprous family appear to be exempt, but even they not unfrequently exhibit glandular lymphatic swellings, indicating a slight degree of or tendency to the disease; and the offspring of such persons frequently become affected."—(*Dr. Regnaud.*)

Ceylon.—It is often hereditary.

Yes. I have known several such instances.—(*T. A. P.*)

Bombay Presidency.—Opinions are divided as to whether it is often hereditary. Dr. Carter thinks that it is.

Often one member only of a family, is said to be affected, the other members remaining free.

Madras Presidency —Dr. Day states that out of 46 cases, hereditary transmission could only be traced in 19, was entirely absent in 27, and in six had evidently passed over one generation to re-appear in the succeeding. Of 31 lepers whose cases were collected by Dr. Porteous, the mothers of but two were affected, and in no case the father; therefore in two only out of 31 was it inherited. These 31 lepers had 111 brothers and sisters who were not leprous; 13 of the 31 lepers were married and had 46 children among them, in none of whom had the disease betrayed itself. None of the parents of these 13 were affected; the disease therefore was not in these cases communicated by diseased parents, nor did these parents inherit it from theirs.

In addition to the 29 cases just quoted, as tabulated by Dr. Porteous, Dr. Shortt knew of 26 cases, and Dr. Day many instances where one member only of the family was affected. The conclusion is, therefore, that "inheritance does not constitute a strong predisposition to "the disease."

In addition to the above evidence, I may state that in my private practice I have met with tubercular leprosy in three European males, all of whom from their social position had every care and luxury that money could provide.—(*Mr. Shaw.*)

Bengal Presidency—Pooree.—Yes; the disease does often appear to be hereditary, as may be seen from the accompanying table, where out of 105 cases 31 give a strong suspicion of hereditary descent, from the circumstances that either one or both of their parents, or other near relatives or friends, have had the disease before them, and the patients themselves could give no other reasonable or probable cause for it. My own opinion is, that even a much larger per-centage of the cases owe their existence to this cause than appears from the table.

Many instances are mentioned by the people where only one member of a family was affected, while all the other members remained free from any trace of it. I have also seen several cases of the kind myself.—(*Mr. Durant.*)

Furreedpoor.—Notwithstanding its undoubted power of transmission from parent to offspring, it is also a noted fact that it is often capable of spontaneous origin, and that these idiopathic cases are just as numerous, if not more so, especially in the tropics, as those which could be alone traced to parental influence.

Arrah.—Hereditariness is the predisposing, and bad food the exciting, cause of the disease; the fact of its appearing amongst the rich and wealthy shows that it must be hereditary. There are instances of the father being a leper, his children free from the disease, which reappears among his grandchildren.

Benares.—"All the reporters but Dr. Dale consider the disease to be hereditary; the natives believe it to be so; still there are but few instances in which more than one member of a family is attacked with leprosy."—(*Dr. Dunbar.*)

Seharunpore.—The belief in its hereditary transmission was so deeply grounded in the minds of the Punjaubees generally, that they were in the habit of burying alive, not only the leper himself, but also his relations and friends, lest in multiplying their kind the disease

would be communicated to distant generations. This practice has since been checked by Government interference.

Lahore.—It is often hereditary, but not always so. I have seen an instance of several healthy children whose father was a confirmed leper. I have also known instances in which one only of a family has been affected while others remained free.—(*Mr. Bose.*)

Nimar.—The disease in several cases would seem to be hereditary; in 14 per cent. of cases parents or grandparents are said to have suffered from it. The cases in which the disease has passed over a generation appear almost as numerous as those in which the parents have had it.

I have known many such instances.—(*Mr. Hunter.*)

Nagpore.—Out of 228 cases of anæsthetic and tubercular leprosy, it was stated or believed to be hereditary in 40, viz., 23 males and 17 females.

In many instances the disease appears to be limited to one member only of a family.

As to the white leprosy, in only one out of 40 cases examined was it said to be hereditary.

Akyab.—That leprosy is hereditary is a belief universal in India. I have never heard a difference of opinion upon that point; but, though this is the generally received opinion even among lepers themselves, each always appears to believe that it has occurred by some unlucky accident in his own case.—(*Mr. Nisbet.*)

9.

Have you reason to believe that leprosy is in any way dependent on, or connected with, syphilis, yaws, or any other disease?

New Brunswick.—"I believe leprosy is a disease by itself. Syphilis and yaws are unknown in the districts where it prevails."—(*Dr. Nicholson.*)

Bermuda.—Yaws is unknown in Bermuda.

Jamaica.—"I believe leprosy to be a disease *sui generis*. I have little doubt that yaws and leprosy may run their course together, as also leprosy and syphilis."—(*Dr. Bowerbank.*)

Dominica.—No. I had occasion formerly to see much of the yaws; I hold that disease to be different in its nature from leprosy.—(*Dr. Imray.*)

St. Vincent.—I think it is connected with scrofula, but not with any other disease. I look upon leprosy as a form of scrofulous disease.—(*Dr. Checkley.*)

Barbadoes.—"I believe it is a disease *sui generis*. The yaws, once so prevalent in the West Indies, is fast disappearing from Barbadoes."—(*Dr. Goding.*)

"I will not say that syphilis can produce *true* leprosy; but that it can produce a disease so closely resembling it as to deceive the most careful observer, I fully believe. It is most common in the offspring of syphilitic patients."—(*Dr. Stevenson.*)

Tobago.—Yes. I look upon leprosy, syphilis and yaws, as cognate.—(*Mr. Purser.*)

Trinidad.—I have not; but syphilis and yaws may coexist with it.

Guiana.—"Leprosy is a disease *sui generis*, independent of any other disease."—(*Dr. Reed.*)

"I believe it to be specificially distinct from any other disease."—(*Dr. Pollard.*)

"I firmly believe leprosy to be connected with syphilis, yea, even to be an offspring of it; imperfectly cured syphilis in parents causes the disease to break out in the progeny in the second, third, or fourth generations."—(*Dr. Van Holst.*)

Cape of Good Hope.—"I consider it to be a peculiar disease, and in no way connected with any other. Tubercular venereal affections may be mistaken for it."—(*Dr. Abercrombie.*)

Damascus.—Leprosy is a separate and independent disease, known in Arabia for many centuries, and mentioned in the Koran of Mohammed under the name of jezâm; whereas syphilis was not known here until the French invasion under Napoleon, when his soldiers brought it hither, whence it is called Hal Franji, or the Frank evil.

Crete.—Although there are certain symptoms in the first stage of the disease resembling those of syphilis, it is not connected in any way either with that or any other malady.

Corfu.—"The common lepra of Willan is often connected with syphilis; but the tubercular disease and the elephantiasis are not so."—(*Proto-medico.*)

Tabreez.—No. Syphilis is rare in the villages of Persia.

Mauritius.—"I have not. In two cases the disease declared itself at the same time with a syphilitic eruption. After the disappearance of the latter, the leprosy continued."—(*Dr. Regnaud.*)

Ceylon.—"Scrofula and syphilis, I believe, would lead to leprosy under favourable circumstances; but that leprosy is a constitutional form of syphilis, as some writers believe, I do not think."—(*H. D.*)

"Leprosy is, in my opinion, often dependent or connected, either directly or remotely, with syphilitic taint."—(*T. A. P.*)

"The majority of cases that have come under my observation were connected with syphilis; and this is perhaps the reason why the disease itself is more frequent in the towns than in country."—(*T. G.*)

Bombay Presidency.—Opinion is decidedly against the belief that leprosy is in any way connected with syphilis, yaws, or any other disease. Dr. Carter thinks that leprosy and syphilis are related; and Dr. Wyllie takes a similar view of leprosy and scorbutus.

Madras Presidency.—Syphilis is extremely common among the natives of India, and all the reporters who have come in contact with leprosy mentioned syphilis as no uncommon complication, Among the 58 patients in the Leper Hospital, Madras, 11 had syphilis previous to the accession of the leprosy; but in none of the reports is any connexion traced between leprosy and syphilis.

Mr. Day in his report, and also in a paper in the "Madras Quarterly Journal of Medical "Science," endeavours to establish that elephantiasis Arabum is allied closely to elephantiasis Græcorum or leprosy, from the circumstance that nearly all the lepers under his charge at Cochin showed symptoms of elephantiasis.

Bengal Presidency.—"I have no reason to believe that leprosy is in any degree dependent upon syphilis, or any other disease."—(*Dr. Jackson.*)

Moorshedabad.—I believe leprosy is very often connected with, if not dependent on, syphilis; and the abuse of mercury is general in native practice.—(*Dr. Fleming.*)

Pubna.—I do not think that leprosy is connected with syphilis, but I believe that it is connected with scrofula in some cases.—(*Mr. Parker.*)

Serampore.—In cases of secondary syphilis, in which mercury has been administered over and over again, the disease has not unfrequently degenerated into leprosy.

Bhaugulpore.—I have very good reason to know that leprosy is dependent on syphilis, for I have known several cases that have been preceded by syphilis.—(*Mr. Crewe.*)

Gyah.—The difficulty of attempting in this district to connect any disease with syphilis is very great, because nearly all the natives have had syphilis, and have taken mercury largely for it.

Almorah.—The natives themselves believe leprosy to depend very often on a syphilitic taint, but I am disposed to think this altogether a mistake. No doubt, with a predisposition to leprosy already existing, if a person's constitution becomes tainted with syphilis, this, like any other lowering cause, may develop the other disease, but I think the morbific cause in each is quite distinct. The natives sometimes consider symptoms which have externally some resemblance to leprosy as leprous, which in reality are true secondary and tertiary syphilitic symptoms. Affections of the mouth and throat and nasal passages, loss of voice, &c., are common to both diseases, but those which depend on a syphilitic cause are almost always easily distinguishable from the true leprous affections.—(*Dr. Merton.*)

Hill States.—I have not. Syphilis is extremely common in these mountains.—(*Mr. Gurden.*)

Bhutteeana.—Yes; more than half the cases that presented themselves in the Government charitable dispensary suffered under some form or other of syphilis.

Lahore.—I have every reason to believe that leprosy is often, but not always, dependent upon syphilis, which may be considered as one of its most powerful predisposing causes.—(*Mr. Bose.*)

Jodhpore.—I believe a person affected with secondary syphilis will be more likely to become the subject of leprosy, in consequence of the cachexia the first-named disease induces. I believe both diseases may exist, and become as it were blended together. I do not think there is any such disease as syphilitic leprosy, that is, leprosy arising from syphilis as an exciting cause.—(*Mr. Moore.*)

Gwalior.—I should think it was quite a distinct disease from syphilis or the yaws; it may have some connexion with scrofula.—(*Mr. Sutherland.*)

Nagpore.—Thirty-three of the patients, viz. 26 males and 7 females, out of the entire number, 228, ascribed their disease to syphilis; 14 males to syphilis and mercury; and two males to small-pox.

I would observe that the native hakeems constantly prescribe mercury for all kinds of diseases (often to salivation), and that if mercury had the effect ascribed to it, leprosy should be more common than it is.—(*Dr. Hende.*)

Nipal.—I do not believe that syphilis, except in cases where there is a decided constitutional or inherited tendency to leprosy, has anything to do with its development; although syphilitic eruptions, in Nipal as elsewhere, often assume a decidedly leprous character.—(*Dr. Oldfield.*)

Akyab.—The general opinion among the natives here is that the abuse of mercury is a frequent cause of leprosy, and I am disposed to think that the opinion is well founded. The value of the mineral as an antisyphilitic remedy is well known, and it is largely employed for the cure of venereal affections by these people. I think it very probable that both the mercurial and syphilitic poisons may induce a cachectic condition of system highly favourable to the development of leprosy, where the hereditary taint exists.—(*Mr. Nisbet.*)

10.

Have you met with instances of the disease appearing to be contagious in the ordinary sense of that term, *i.e.*, communicated to healthy persons by direct contact with, or close proximity to, diseased persons?

a. If so, in what stage was the malady in the diseased person? Were there ulcerations with a discharge?

b. Please to describe briefly the case or cases of contagious communication which you have seen yourself.

c. Does the disease seem to be transmissible by sexual intercourse?

New Brunswick.—"I am thoroughly convinced that the disease, in Tracadie, is not contagious, and that it is not transmissible by sexual intercourse."—(*Dr. Bayard.*)

"I have never met with an instance of leprosy being communicated to a healthy person by contagion."—(*Dr. Nicholson.*)

"Several lepers have cohabited with their wives for years, and no infection was communicated to them."—(*Dr. Benson.*)

Jamaica.—"I am certain that it is in no way contagious, and that it is not transmissible by sexual intercourse. The evidence against the contagion of leprosy, in all its forms, is irrefragable."—(*Dr. Fiddes.*)

Barbadoes.—"I have not met with any cases of contagion. None of those in attendance, during the last nine years, upon the inmates of the lazaretto have contracted the disease; and I, after receiving a wound from a knife, moistened with the fluids of an inmate, have escaped, although the wound was followed by great constitutional irritation and loss of the finger. From what I have heard, I do not believe it communicable by sexual intercourse."—(*Dr. Browne.*)

Grenada.—"I have seen a few persons amongst those affected where contagion appeared evident.

"*b.* A young girl about 12 or 14 years of age slept in the same bed with a young woman who had symptoms of leprosy. Within 12 months the girl presented the red patches, and seven or eight years afterwards she was a confirmed leper. The mother of this girl contracted the disease, but the father escaped.

"I do not think the disease in its incipient stage transmissible by sexual intercourse.

"I consider that contagion will take place when ulcerations exist with copious discharge, and this can only occur in the first or tuberculous leprosy."—(*Dr. Aquart.*)

Trinidad.—"I have never met with a single instance of it appearing to be so. Ulcers with ichorous discharge are dressed several times a day by the surgery man, who has been employed for 12 years at the leper asylum. The washerwoman, who has been there for 16 years, and handles the clothes of the lepers, and the medical superintendent, delivering women in labour, amputating limbs, and performing other surgical operations, have escaped.

"The disease has not been transmissible by sexual intercourse in many cases which have been under my care, and which most decidedly confirm my opinion that it is not contagious."—(*Dr. Saturnin.*)

Guiana.—"I have met with only two cases in which, after minute inquiry, I believe the disease to have been communicated by direct contact. My own opinion is in favour of the contagiousness of leprosy, and that it may be propagated by the matter of ulcerated tubercles being applied to any raw surface; but I admit that I have met with cases which would seem to preclude the idea that the disease can be considered contagious, in the ordinary sense of the term.

"I have known instances where black women have cohabited for years with their husbands while labouring under confirmed and ulcerative leprosy, and have children by them, without manifesting the slightest trace of the disease."—(*Dr. Manget.*)

"I am clearly of opinion that it is contagious in every stage and form, and especially so after ulceration. I have seen many instances which could only be referred to contagion; the convictions of the parties, and the most rigorous examination of the history of the cases giving no clue whatever to the pre-existence of any family taint. It is notorious in respect of a white family of distinction in this colony, that, having disregarded the warnings of their medical advisers of the danger of permitting the young members to play in company with a negro boy who exhibited the symptoms of the disease, they one and all became infected, and the majority of them fell victims to the fatal indiscretion.

"(*c.*) The liability to the disease in this way is undoubted."—(*Dr. Pollard.*)

"From what I have seen and heard in Surinam, Dutch Guiana, where more attention is paid to the disease than in British Guiana, I believe it to be contagious. I have known an officer of high rank there contracting it from cohabiting with a woman whose family were affected with it. In Dutch Guiana, people are afraid of shaking hands with any persons who are suspected of the disease, and even of sitting on the same chair which they have occupied, or of using the same privies."—(*Dr. Van Holst.*)

Cape of Good Hope.—"I have not seen a single case where it was communicated by contagion. I have known lepers cohabiting with females who remained exempt."—(*Dr. Ebden.*)

Jerusalem.—I have never heard of such instances.—(*Consul Finn.*)

Damascus.—It is not contagious, and not transmissible by sexual intercourse.

Rhodes.—It is entirely exempt from contagion, or transmission by sexual intercourse.

Mytilene.—It is demonstrably not contagious. Dr. Bargilli practised inoculation in two instances, but without results.

Crete.—There are 127 persons who have all lived together healthy among lepers for many years.—(*Dr. Brunelli.*)

Corfu.—"Two instances I have met substantiate the opinion that it is contagious after a lapse of time. In both the wife became affected some years after the husband had been attacked."—(*Proto-medico.*)

"I have never been able to recognise the contagiousness of leprosy. (*c.*) Women have often lived with leprous husbands without contracting the disease."—(*Dr. Tygaldos.*)

Tabreez.—I have met with no case of direct contagion. (*c.*) I have seen several instances of the contrary.—(*Dr. Cormick.*)

Shanghae.—I have never met with an instance of the disease appearing to be contagious.—(*Dr. Henderson.*)

Victoria.—No instance of apparent contagion has been met with in this colony.

Mauritius.—"I have met with two cases where the disease seemed to be transmissible; in the one instance from the husband to the wife, and in the other from a man to a child of his wife by a former husband."—(*Dr. Regnaud.*)

"Never. I know two instances where medical men have wounded themselves in dissection, but without any bad results."—(*Dr. Powell.*)

Ceylon.—"I have no reason to consider it contagious, or transmissible by sexual intercourse."—(*Dr. Davy.*)

I have not met with a single case of contagious communication of the disease, although popular belief in this country is strongly in favour of its communicability.—(*T. A. P.*)

I have not known a single instance in which a wife, whose husband was a leper, was affected by this disease, whereas numerous instances have come under my observation in which the offspring of a diseased person have been affected.—(*T. G.*)

Bombay Presidency.—None of the observers appear to have obtained conclusive proof of leprosy being contagious, or transmissible by sexual intercourse.

Madras Presidency.—Leprosy does not appear to be contagious. In 1853 Mr. Porteous gave a list of the servants who were employed at the Madras Leper Hospital, with the dates of their service, by which it appeared there were nine servants in the institution who had been employed for periods varying between two and 14 years, and all were unaffected with the disease.

Bengal Presidency—"It is not a contagious disease in the ordinary sense of the term, . . nor does it seem communicable by sexual intercourse."—(*Dr. Jackson.*)

Calcutta.—Never. Healthy men have dressed the ulcers of lepers and washed their soiled bandages for years without a trace of the disease appearing on them.

c. Yes.

Sumbulpoor.—*a.* On the subject of contagion there appears to be some room for doubt. I have never known or heard of a case in which simple contact on one occasion has produced

the disease, but by prolonged liability to contact with, or close proximity to, diseased persons, there is reason to believe that the disease has been reproduced. The natives of Sumbulpoor do not themselves believe that leprosy is contagious.

c. I have not been able to obtain any proof of such transmission.—(*Mr. Jackson.*)

Mozufferpore.—I know of many cases in which there was a clear proof of the contagious nature of the disease.

a. I believe leprosy is alone contagious when the ulcerative stage has commenced, and it appears as if the disease took a very long time to affect the system. It is not a matter of days, or even months, but often of years.

The parents of female children having leprosy will frequently destroy their offspring.

c. Yes; there can be no doubt about it.—(*Mr. Macnamara.*)

Arrah.—As far as I can ascertain, it is not known to be contagious or infectious.

c. I cannot ascertain; the hakeems say no.—(*Dr. Hutchinson.*)

Benares.—"All the reporters agree in stating that leprosy is not contagious, nor transmissible by sexual intercourse."—(*Dr. Dunbar.*)

Cawnpore.—I have met with none, nor has the sub-assistant surgeon, but the native doctors say it is contagious in the suppurative stage. The hospital servants as well as the sub-assistant surgeon constantly handle these cases in the ulcerative stage, and they have never become affected.—(*Dr. Jones.*)

Budaon.—I have met with instances in which the disease proved to be contagious after living in close proximity to the diseased person for a long period of time, say one or two years.

a. The malady was in full vigour, and there were ulcerations with a discharge.—(*Dr. Harris.*)

Serohi—Jodhpore—Ulwur—Jeypore—Harowtee.—The replies of Dr. Lownds, Mr. Moore, Mr. Dickinson, and Dr. Burr, are in the negative. Mohamed Naeem says that he has known one case in which the servant of a leprous person took the disease by waiting upon his master. On the other hand, he mentions the instance of a woman in the last stage of leprosy having a child two years old at her breast; she died in the hospital; but her boy, now 16 years of age, is a fine strong youth, without any trace of the disease.

Nagpore.—During the nine years I have held charge of the Nagpore gaol, with a daily average of 500 prisoners, all of whom freely intermingled, and some of whom when imprisoned were lepers, I have never known an instance of contagion, and the reply to Interrogatory XI. tends to confirm the same.

As far as I could ascertain, the disease does not seem transmissible by sexual intercourse. —(*Dr. Hende.*)

Moulmien.—Never contagious.

Kyouk Phyoo.—I have never met with an instance.

c. I do not believe it to be transmissible by sexual intercourse. I knew a man, a confirmed leper, who was the superintendent of the Leper Asylum in Calcutta years ago, yet he was a married man, and his wife was perfectly free from the disease.—(*Mr. Thomas.*)

Akyab.—I have seen nothing to induce me to believe that leprosy is contagious, and I do not believe it is ever communicated in this way, nor even by sexual intercourse.—(*Mr. Nisbet.*)

Singapore.—I have met with three cases in which I can with certainty state the disease was contracted by continued and direct contagion; two cases specified under *b*, and one specified in case 6, the details of which are given below.—(*Mr. Rose.*)

Labuan.—Dr. McDougall writes, "I have not met with a case I could satisfy myself had "arisen from contagion; but it is the universal belief among the people, whether Chinese, "Malay, or Dyak, that it is contagious, and they all alike separate the lepers, and avoid "all contact with them."

11.

Are persons affected with leprosy permitted in the colony to communicate freely with the rest of the community? or is there any restriction imposed, or segregation enforced, in respect of them?

New Brunswick.—"No; as soon as the disease has made its appearance, they are confined to the lazaretto."—(*Dr. Gordon.*)

Bahamas.—There is no positive law to prevent lepers from mixing with other persons, although the colony has endeavoured to prevent it by establishing a lazaretto in conjunction with the asylum.

Jamaica.—"Hitherto no restriction has been imposed."—(*Dr. Bowerbank.*)

Dominica.—No restrictions are imposed, unless the lepers are receiving relief from the parochial fund.

St. Vincent.—Segregation and legal provision were attempted here, but the attempt failed.

Barbadoes.—"Among the independent classes, they sedulously exclude themselves from society. All from the highest to the lowest have such a dread of the disease being known in their families that they keep them out of sight as much as possible. The destitute are sent to the lazaretto, or go about begging."—(*Dr. Young.*)

Trinidad.—"Leprous vagrants and beggars, found in the public streets and highways, are arrested by the police and conveyed to the leper asylum. There are no restrictions imposed in regard of those who can maintain themselves."—(*Dr. Saturnin.*)

Guiana.—"There is an ordinance to compel the confinement of lepers to the asylum of the colony; but as informations are seldom laid, it may be considered inoperative. The negroes, being confirmed fatalists, although firmly believing in the contagiousness of the disease, take no exception to the freest intercourse with lepers."—(*Dr. Pollard.*)

"Neither the lepers nor their friends wish that they should be confined, as they dread the seclusion and separation from their ordinary habits almost as much as penal servitude. Any cases duly certified and sent to the Leper Asylum are kept separated ever after."—(*Dr. Carney.*)

"In Dutch Guiana, on any suspicion the person is brought before the medical committee, and, on the least proof of the existence of the disease, he is sent to the Leper Establishment, where the lepers are kept separated from the rest of the community."—(*Dr. Van Holst.*)

Cape of Good Hope.—"There is no law authorizing the deportation of any leper, nor his removal from the home of his friends. The Government provides a very comfortable asylum for all lepers; but its insular position deters many, and their friends prefer caring for them at home."—(*Dr. Ebden.*)

Cairo.—They mostly live by begging in the streets.

Jerusalem.—Contact is habitually avoided on all sides. The lepers have vessels on the ground before them into which the charitable cast their alms.

Damascus.—In towns there are no restrictions on lepers; but the villagers are afraid of contagion, and therefore oblige the diseased person to proceed to Damascus, or some other city where there may be a leper house. Those who do not or cannot conform to this custom are made to live in a cave or hut outside the village, where they remain in perpetual quarantine.

Rhodes.—They may communicate freely until the disease attracts public attention, and then, without consulting any medical man, and even against his opinion, they are banished to a desert spot of the island, as at Halki, or to an uninhabited island, as at Symi, where they must build their own dwellings, and subsist in rags as they best can, by begging or otherwise.

Tabreez.—As soon as the disease is known to have affected a person, he or she is driven from the town or village to the highways, where the sufferer lives in a most pitiable condition, in wretched holes or hovels, depending entirely on charity.

Canton.—They are nominally secluded from society, but practically the poor are allowed to roam about as beggars, and the rich are exempted from confinement in the lazar house by payment of large bribes to the police. Leprosy, however, is regarded as so unclean and contagious a disease that the infected persons are banished by their families, who will not eat or live with them lest they also should become contaminated.

Shanghae.—Lepers communicate freely with the rest of the community. No restriction is imposed.

Victoria.—Leprous persons are in this colony permitted to communicate freely with the rest of the community.

Mauritius.—"Formerly in Mauritius and its dependencies lepers were kept segregated; but, for many years past, since the disease has been considered to be non-contagious, no restriction has been imposed."—(*Mr. Ford.*)

Ceylon.—There is no legislative restriction for the compulsory segregation of lepers in this island; but there is a public asylum to which the poor and unfortunate sufferers voluntarily resort. Those who are well to do remain in their own houses and among their own families, but never freely mix themselves with the rest of the community.

Bombay Presidency.—No restriction is imposed in respect of lepers in the Bombay Presidency. A harsh custom prevails among the lowest orders of expelling from their doors any of their offspring affected with leprosy, who thus swell the ranks of wandering mendicants.

Madras Presidency.—There are no laws to prevent lepers from communicating with the rest of the community; but, on the whole they are avoided.

Bengal Presidency.—"There is no legal impediment to the communication of lepers with the people. The social impediment is sufficiently strong. The malady is held in great dread by the Europeans and natives; many of the former have their servants inspected every month by a native doctor to ascertain if there is any one affected by it; so general is the impression of its being contagious. Instances are recorded of a Mussulman being disinherited in consequence of the disease; and, amongst the Eurasians, a marriage may be broken off by the discovery of the taint in one of the parties."—(*Dr. Jackson.*)

Calcutta.—They are to be seen at all the bazaars, where some of the principal beggars are lepers.

Burdwan.—Segregation is enforced only in the gaol.

Raneegunge.—No restrictions by law, but the people avoid them, and consider they are the most depraved of the human race.

The general expression is, "God has punished them for some great sin they have committed," and it is difficult to get anything further out of them.

Benares.—"Lepers are under no legal but only social restriction, and this is confined to cooking and eating and personal contact; not to common intercourse, nor are lepers ejected from their homes."—(*Dr. Dunbar.*)

Seharunpore.—In this district lepers are certainly avoided by the community at large, that is, they are not permitted to hold free communication, or to keep close company with the public. They herd by themselves at night, and are scattered during the day begging. This social restriction is based upon Hindoo physiology, which holds a leper to be an unclean person, and teaches the people to avoid even the touch of such an one. The popular vulgar conviction among the lower orders of Mussulmans is the same as that of the Hindoos in this respect, but the better educated classes of both hold it to be nothing more than a disease, in the ordinary acceptation of the term, and their Moslem teaching is silent on this point, at least nothing is said about debarring a leper from the advantages of society.

Serohi.—Lepers are forced to live outside of villages by the inhabitants, but there are no regulations on the subject. At Mount Aboo the lepers live by themselves in a cave.

Lahore.—There is no enforced segregation.

Loodiana.—The inhabitants of the towns and villages themselves prevent such communication occurring. The authorities do not, I believe, in any way interfere, beyond providing a village outside the chief town in the district (Loodiana) as a residence for the lepers. When a native of a village in the district becomes affected with leprosy, a house is built by his neighbours for him outside the village, and he is supplied with food, &c., by his friends. If he prefers it, he comes to the leper village near Loodiana. The solitary hut of the leper is to be seen outside many of the larger towns and villages in the district; one here and there. —(*Mr. Butt.*)

12.

12. What public provision is made for the reception and treatment of the leprous poor? Are they admitted into the general hospitals? or are there separate infirmaries or asylums provided for them?

Please to describe the structural and sanitary condition of such buildings, and the arrangements made for the medical and hygienic treatment of the sick in them.

New Brunswick.—"The leprous poor are fed and clothed in the lazaretto, and a medical man attends upon them."—(*Dr. Gordon.*)

"The building is surrounded by a fence 12 feet high, to prevent the escape of the lepers during the night. Within the area of the enclosure, six acres in extent, the patients may take exercise and amusement."—(*Dr. Nicholson.*)

The Lieutenant-Governor states that a few years ago the lazaretto was removed from Sheldrake Island in the Miramichi river to Tracadie, on the east coast of the county of Gloucester. "Its situation is dreary in the extreme. . . Until of late years, the building, called "by courtesy a leper hospital, was little better than a mere prison." *See* Appendix, p. 203.

Jamaica.—There has not been hitherto any asylum for lepers in this colony. The Legislature has recently passed an Act for such an institution, but it has not yet been established. About a dozen lepers in this city (Kingston) are kept, at the expense of the Corporation, in an old building formerly an asylum for the destitute poor of the parish. It is miserably dilapidated and filthy, and the condition of the inmates deplorable. Lepers are not admitted into any of the general hospitals.

Montserrat.—There is a small lazaretto, capable of containing six persons in separate apartments, forming a detached part of the asylum for the reception of the sick and infirm poor.

Antigua.—There has been a leper hospital for the last 25 years, in the leeward suburbs of the city, not far from the sea. At present there are 22 inmates.

St. Vincent.—Some cases of anæsthetic leprosy are, and have been, admitted into the almshouse.

Barbadoes.—All leprous persons found vagrant in the streets may be sent to the lazaretto (established in 1853) by a magistrate's order. There could be no difficulty in their obtaining admission to the general hospital, if labouring under other diseases.

Grenada.—There is a poor-house and a colonial hospital, to which they may be admitted, according to the rules of these institutions.

Trinidad.—"An asylum was provided in 1843, about three miles from Port of Spain, for indigent lepers. Lepers are not admitted into the general hospitals. There is an asylum for their reception."—(*Dr. Saturnin.*)

Guiana.—"The Combined Court vote annually certain sums for the support and treatment of the leprous poor. A separate and isolated establishment, termed the General Leper Asylum, is provided for them. It was established in 1858, and is situated on Mahaica Creek."—(*Dr. Reed.*)

Cape of Good Hope.—"There is a lazaret on Robbin Island, about eight miles from Cape Town. It forms part of a general establishment for lepers, lunatics, and chronic ailments; but each class of patients is separately accommodated."—(*Dr. Abercrombie.*)

"Lepers are not generally admitted into an hospital ordinarily, but they are so temporarily in some rare cases."—(*Dr. Ebden.*)

Sierra Leone.—They are admitted into the general hospital.

Cairo.—No provision is made. Four or five cases of leprosy have been admitted into the public hospitals at intervals.

Jerusalem.—In one part of the city, within and close to the wall, there are some clay-built cottages—not more than a dozen—for the reception of those patients (usually denominated lepers) for whose benefit large endowments have been left by benevolent persons in past times. These dwellings have a mud wall surrounding them on three sides, the fourth side being the wall of the city; and the doors and windows are turned toward the wall. No medical attendance is provided.

Damascus.—In Damascus there are two establishments, one just outside the city walls for Moslems, and the other in the Christian quarter for Christians, where the lepers of these sects are respectively fed and clothed from the proceeds of property—such as shops, houses, &c.—entailed for their benefit.

Lepers are never admitted into general hospitals.

The buildings are of the poorest sort, and no medical aid is afforded to the inmates.

Crete.—Whoever walks out of the gate of one of the large towns, especially on a Saturday, is distressed by the hideous sight of many of these unhappy beings sitting by the road-side imploring charity. It is sad to behold the condition of these unfortunate people, and to think that as soon as they are branded with the name of leper they are driven away from parents, children, relatives, and friends; shunned like criminals, deprived of the power of earning their livelihood in an honest manner by their labour, and condemned to the degraded state of beggars.

Corfu.—They are not admitted into the general hospital. Nothing is done for their relief; they are left to their misery and sufferings.

Constantinople.—The leper asylum at Scutari, in the middle of the cemetery there, contains 20 small apartments. None but Mussulmen are admitted; leprous persons of other races are received into their respective hospitals.

Tabreez.—There is not a single hospital or asylum in the country, nor is there any provision for the alleviation of suffering and distress.

Hong Kong.—There is no asylum here, but there is a lazaret, supported by private charity, on Macao, of which a notice is given by the governor of the island (*vide* Appendix p. 222).

Canton.—There is a lazar-house here supported by the government capable of holding several hundred persons. It is chiefly used for poor outcast lepers, who receive daily small allowances of rice, but are at the same time allowed to roam the streets as beggars.

Shanghae.—There is no public provision made for the reception and treatment of the leprous poor in this district.

Victoria.—There are no separate infirmaries or asylums for leprous patients, but they are admitted into the general hospitals.

Mauritius.—" No public provision is made. Lepers are not admitted into the general hospital at Port Louis. An establishment for lepers used to be kept by Government on Ile Curieuse, one of the Seychelles, with a medical superintendent on the spot."—(*Mr. Ford.*)

" A hospital at St. Lazare was founded six years ago by the Sisters of Charity in the island. It is not under Government superintendence."—(*Dr. Regnaud.**)

Ceylon.—They are not admitted into the general hospitals, except perhaps for a few days until they can be transferred to the leper asylum, which is beautifully situated on the banks of a river 4½ miles from Colombo town. The arrangements therein are such as obtain in all other well regulated government hospitals, and the inmates are supplied with everything that might contribute to their health and comfort. Medical attendance is provided, medicines supplied, the diet is liberal and nutritious, and even small luxuries, indulged in by natives, are not denied them. They have plenty of water for purposes of ablution. But they are a discontented, dissatisfied body, morose, and indulge in drink and opium or bhang.

Bombay Presidency.—With the exception of the leper asylum at Rajcote and Bombay, no special provision is made for the leprous poor. They are admitted into most of the general hospitals.

In Bombay lepers are received both into the native general hospital (the Jamsetjee Jejeebhoy) and into the Dhurumsalla, a home for the destitute, supported by a private charity. In the former they are not strictly segregated, and in the latter the leprous and blind form the mass of the resident poor.

Madras Presidency.—There are three lazarettos in this Presidency; one at Madras, one at Cochin, and one at Bangalore. As a rule, lepers are not admitted into the general or civil hospitals throughout the country, but a leper affected with any intercurrent disease would not be denied admittance.

All these institutions have suitable establishments of medical attendance, ward, attendants, washermen, sweepers, coolies, &c., and the same dietary is allowed as in European and native hospitals respectively. All are admitted who seek relief, and such as are picked up by the police as vagrants and beggars are brought to the leper hospital. They are encouraged in Madras to employ themselves in gardening, which the grounds admit of; many do so and cultivate fruit trees and vegetables, the profits of which are made over to the patients themselves; but many get tired of the monotony of hospital life and seek their discharge after varying periods. There is no law by which they can be detained in the house, but they not unfrequently return.

Bengal Presidency—Calcutta.—There is an asylum for the reception and treatment of the leprous poor, who are not admitted into the general hospitals or dispensaries. The asylum is composed of several detached buildings, well ventilated and dry; some capable of holding from 18 to 20 beds, others from 12 to 14; the males being left strictly apart from the females.

Pooree.—There is no special hospital or infirmary for the leprous poor; but there is a large and well supplied Government dispensary and pilgrim hospital kept up in one building at this station, into which a certain number of lepers who apply for relief are admitted, and supplied with medicines and food at the Government expense.

As it would be injudicious to accommodate infected patients in the wards, the lepers, when admitted, are kept in the verandah, where they receive all the attention necessary.

* We admitted last year several cases of *tuberculous lepra* (*tsarath*), persons admitted with this now spreading affection being precluded from entering the Grand River Asylum as before. All our patients were males, and most of them had reached the ulcerative stage of the disease. In this hospital tuberculous leprosy is often met with in patients who, before they present any sign of the skin affection, are suffering from caries of the small bones, such as those of the hand and foot; this is accompanied by chronic ulcers with scooped out edges, showing themselves mostly on the palmar and plantar surfaces of the limbs, and leading down to the diseased bones. The separation of these, or portion of them, from the contiguous sound parts is a long and tedious process, the patient in the meanwhile presenting, for a long time, no other complication.—*Report of the Civil Hospital, Port Louis, for* 1863, *in the Reports on H.M.'s Colonial Possessions*, 1865. (*Blue Book*).

Benares.—There is a leper asylum at Benares. Lepers are also admitted for treatment as out and in patients in dispensaries.

The leper asylum is in connexion with the asylum for blind and destitute persons of all nations and classes, founded by Rajah Kally Shunkur Ghoshaul Bahadoor.

Mussoorie.—Admitted in common with other patients; and, if poor, fed whilst under treatment at Government expense in the charitable dispensaries.

Lahore.—Most live as roving mendicants. They are very seldom admitted into general hospitals; a few only are sometimes accommodated in ordinary pauper-houses, where they are simply fed and clothed at the public expense.

Bangalore.—An asylum for the leprous poor of the cantonment and pettah of Bangalore was built under the directions of the late Sir Mark Cubbon in the year 1845, and this having been found inadequate and badly situated, a new asylum was built in 1857. Only those whose disease is far advanced are admitted into it, and it has been intended more as a place of refuge for them than as an hospital for their cure.

At the civil hospital in Bangalore, all lepers who have applied for treatment have received it; and from 1853 to 1862, inclusive, 73 cases were treated as in-patients and 45 out-patients, besides 16 cases which have been entered in the registers as lepra simply, but who were probably lepers.

Moulmein.—None. They are treated at the civil and general dispensaries and hospitals in Burmah and India.

Straits Settlements.—Government have a leper ward attached to the large pauper hospital at Singapore (built at the expense of a wealthy Chinese named Tan Tock Seng), where lepers are received, but they manage to escape, and prowl about, seeking alms, a nuisance to the whole community.

At Malacca and Penang, however, large sums of money have been subscribed by the richer natives of all classes for the erection of a leper hospital, so great is the dread they have of the disease; and Government have given over Pulo "Siranbon," an island contiguous to Malacca, where a comfortable lazaretto has been erected, to which lepers are removed at their own request, I believe (as I repeat there is no act at present in force to compel them).

13.

Can you state the number of leprous persons maintained at the public expense in the colony?

New Brunswick.—The number at present maintained is 22. At one time there were 37 lepers in the lazaret.

Bahamas.—The number in the lazaret at Nassau is generally from 8 to 12.

Jamaica.—"I believe about 14 or 15 in Kingston receive each 2*s.* per week. Many others beg about the streets."—(*Dr. Bowerbank.*)

"I am not aware of the number maintained by the other country parishes. I believe that several get a pauper allowance, and are left to provide for themselves."—(*Dr. Fiddes.*)

St. Kitts.—The number is 47. A weekly allowance of from 1*s.* to 2*s.* is made to each.

Nevis.—Five lepers are maintained in the asylum.

Montserrat.—The six in the lazaret are wholly provided for, and a small money allowance is granted to two or three others.

Barbadoes.—The number at present maintained by the public in the lazaret is 46.

Trinidad.—At present the number maintained is 55.

Guiana.—The following is the number in the asylum for five years:—

		Males.	Females.	Total.
In 1858	- -	66	11	77
„ 1859	(additional) -	31	15	46
„ 1860	„ -	23	—	23
„ 1861	„ -	20	7	27
„ 1862	„ -	32	10	42
				215

(*Dr. Reed.*)

Cape of Good Hope.—The average number in the lazaret for the last 10 years has been from 50 to 60.

Sierra Leone.—Total, 103; 57 males and 46 females. They are principally liberated Africans.

Jerusalem.—The number is generally about a dozen.

Damascus.—Before the troubles of 1860, there were about 50 lepers in the two establishments, viz., 20 in the Moslem, and 30 in the Christian one. Of the former there remain 16 or 17, and of the latter, some died of fright, and others returned to their village huts; but there are now more than 30 Christian lepers who are desirous to come to Damascus as soon as the house, which was burned down, shall have been rebuilt.

Cyprus.—There are 35—15 men and 20 women—at present in the lazaret. The excess of females is owing to the fact that the men more frequently escape from it.

Crete.—It may be calculated that 300 lepers reside in the six villages assigned to them, and that 200 remain secreted in their houses.*

Constantinople.—The number in the asylum at Scutari is at present 30—15 men and 15 women—married among themselves. The children born in the asylum are as yet healthy.

Canton.—About 900 are in the leper asylum; besides these about 2,500 lepers subsist in Canton as beggars, pedlars, &c.

Mauritius.—In 1851, the number of lepers in the lazaret on Ile Curiense, Seychelles, was 32—21 males and 11 females. In February, 1864, the total number was only five; "but "this is no criterion as to the actual amount of existing leprosy."

Ceylon.—"In 1816, the number of inmates in the leper hospital near Columbo was 32—17 males and 15 females."—(*Dr. J. Davy.*)

Forty-five was about the average daily number of patients maintained at the leper hospital during the year 1862.

Bombay Presidency.—"Government does not directly contribute to the maintenance of lepers, though it does so indirectly to some extent. In the Jamsetjee Jejeebhoy hospital about 60 lepers are annually admitted as patients; in the Dhurumsalla the residents number about 100."—(*Dr. Carter.*)

Madras Presidency.—About 60 lepers in Madras, and between 30 or 40 at Cochin, and about five or six at Chingleput, are generally under treatment.

Bengal Presidency—Calcutta.—There are at present 48 lepers in the asylum; 33 men and 15 women.

Pooree.—I find from the only rough data at my command, obtained through the police, that there are about 200 persons of all ages who are living either partially or wholly on public charity as lepers. This, though I believe to be incorrect, and below the actual number to be found in Pooree, still may be looked upon as a near approximation to the truth.—(*Mr. Durant.*)

Benares.—The leper asylum contains an average of eight patients. They generally come when unable to go about begging, as they prefer the comparative freedom of wandering mendicants to the confinement of the asylum. They generally leave the asylum as soon as they are able to walk about without pain. There are at present 10 lepers; their ages vary from 16 to 50, and duration of disease from four to about 30 years.

Agra.—"The daily average for the last year, 1862, maintained in the leper asylum here (supported by charitable subscription), was about 50."—(*Dr. Murray.*)

Lahore.—In this, the district of Lahore, there used to be maintained for some time past about 15 lepers in a day, who are now transferred to the leper village at Torunturun, a place about 40 miles from here, situated in the sister district of Umritsur.

Bangalore.—The usual number of lepers maintained in the asylum is about 33 to 34, and the relief is meant to be confined to lepers belonging to Bangalore and its immediate vicinity. The numerous lepers all over the Mysore country are unprovided for by the Government, and must be maintained either on their private means or by the charity of their neighbours.

At *Singapore* there are about 32.

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* Dr. Hjorth considers that the number of lepers in the island is double that assigned by Dr. Brunelli. In a valuable paper by Deputy Inspector Dr. Smart, R.N., who, while serving with the Mediterranean fleet in 1851-52, took the opportunity of examining into the prevalence of leprosy in Crete, the number was then estimated at certainly not less than 900, of whom about two-thirds were assembled in the leper villages, and the remainder were either residing with their families, living in places of conceal[illegible], or mixing unsuspected with the inhabitants. He gives a table, enumerating the districts of the isl[illegible] where the disease chiefly prevails, and the estimated number of resident lepers in each.—*Medical Times and Gazette*, 1853, Vol. II.

14.

Have you reason, from personal knowledge, to believe that the disease has been of late years,—say during the last 15 or 20 years,—on the increase in the colony of or otherwise?

And if so, please to state what, in your opinion, may have contributed to its increase or its diminution.

New Brunswick.—There does not appear to be any increase or diminution of the disease in this country.

Bahamas.—From all I can learn, the disease is on the increase in several of the out islands. (*Dr. Chipman.*)

Jamaica.—"That it has been increasing in this city, and in the island generally, during the last 15 years is a fact well known to the public, and to the profession.

"The transmission of the disease by the sexual intercourse of the lepers may be one of the important causes of this increase; and the degraded condition of the majority of the people in their dwellings, food, and mode of life must tend to produce a dyscrusia of the blood, and to foster the development of leprosy."—(*Dr. Fiddes.*)

Antigua.—After emancipation, in 1834, it appeared to be on the increase; but I believe this was owing to cases coming more before the public which had formerly been kept on the estates.—(*Dr. Nicholson.*)

Barbadoes.—"I do not believe that leprosy has been on the increase in Barbadoes during the last 15 or 20 years. As to its diminution I cannot speak confidently."—(*Dr. Young.*)

"I do not know whether it has or not, but it has been brought more under public notice since emancipation in 1838."—(*Dr. Browne.*)

"I think it has increased of late years, but I cannot ascribe this to any particular cause." (*Dr. Stevenson.*)

Trinidad.—"I have reason to think that it has decreased during the last 12 years, as the number of patients then in the asylum was 60 and more, whereas from that date it has diminished by 8 or 10 per cent."—(*Dr. Saturnin.*)

"It has certainly appeared to me to be on the increase in this colony during the last 20 years."—(*Dr. Murray.*)

"I do not believe that it is on the increase nor that it has diminished. An inquiry was instituted on this subject by Governor Sir Ralph Woodford, confirmatory of this fact."—(*Dr. Anderson.*)

Tobago.—It has not been on the increase, but positively on the decrease; and this has no doubt been mainly dependent on the circumstance of the lower orders being better housed, fed, and clad, and their comparative immunity from depressing mental causes.

Guiana.—"From personal knowledge, I know that it has been on the increase during the last 20 years.

"During the time of slavery in this colony up to August 1838, slave lepers were kept isolated from the healthy; this tended to prevent the disease spreading. On emancipation taking place at that date, the lepers went to live with their friends. Immigration then began, first with the neighbouring West India Islands, and many lepers were introduced. Subsequently, they came here from Madeira, India, China, and Africa, as immigrants."—(*Dr. Reed.*)

"Without doubt, the disease is fearfully on the increase of late years, at least in this part of the colony. The free intercourse and cohabitation are the principal causes.

"On some estates I know several coolies afflicted with it."—(*Dr. Van Holst.*)

Cape of Good Hope.—"From the number of lepers now to be seen in the streets of Cape Town, I believe that the disease is on the increase, owing probably to no steps being taken to segregate the lepers, and separate the sexes in the colony."—(*Dr. Abercrombie.*)

Smyrna.—Forty years ago there was a makallah or parish here full of them; but for the last 10 or 15 years they have all disappeared, in consequence of the better food, clothing, and hygienic condition of the people.

Scio.—No increase or otherwise has taken place within the last 50 years.

Mytelene.—The disease is probably on the increase, from the liberty given to lepers to marry.

Tabreez.—Dr. Cormick thinks, and it is the general opinion, that leprosy has been on the increase of late years.

Mauritius.—"In 1781, there were 12 white and 59 black lepers in the island, according to the official memoir of Drs. Deschamps and Rochard; since then no statistical inquiry has

been made. The disease has spread more and more, and I am certain that there are at this time several thousands in the colony. During my practice for the last seven years I have observed a degeneracy of the native population, attributable, I think, to a faulty hygienic condition, coupled with the debilitating influence of the climate."—(*Dr. Regnaud.*)

"It has certainly been on the increase during the last 15 or 20 years; but I do not believe more so than in proportion to the increase of the population. The large immigration from India, all over which vast country leprosy prevails, has also brought an influx of persons infected with the disease."—(*Mr. Ford.*)

Ceylon.—"I have reason to believe that the disease has of late years been on the increase among the better classes of the coloured population. It is, in my opinion, ascribable to imprudent connections with hereditarily predisposed individuals, and to syphilitic taint on the part of the men."—(*T. A. P.*)

"In Ceylon the disease has gradually increased during the past 15 years; and the larger number now in the hospital is, I believe chiefly from the influx of Malabars into Ceylon."—(*T. G.*)

Bombay Presidency.—It is a general opinion that leprosy has not been, of late years, on the increase in this presidency. It is believed in Surat that, since large wages have been given for labour by the railway company, the disease has been slightly on the decrease.

Madras Presidency.—The disease appears to be stationary in this presidency.

Bengal Presidency—Pooree.—From what I can gather from the people and the hospital records, I may state that the disease does appear to be on the increase, though not to any great extent; still, if so, this is a fact of great significance, and shows that whatever circumstances do give rise or are obnoxious to it are more active and sure in their effects now than they were before. Of these I believe I am correct in stating that indigent poverty, caused by severe calamities of season, and the high prices of provisions prevailing in consequence, are the chief.—(*Mr. Durant.*)

Beerbhoom.—I believe that the disease is on the decrease, owing to a greater degree of prosperity among the people of the district generally; and this result, in my opinion, may be ascribed in a great measure to the construction of railways through the district.—(*Mr. Sheridan.*)

Jessore.—From minute inquiries I find the disease has gradually been decreasing in this district for some 20 years, attributable to the clearing away of jungle, drainage, &c., and therefore getting rid of a great deal of malaria; also the country being in a high state of cultivation instead of a swamp inhabited by wild buffaloes, which it was 30 years ago.—(*Dr. Amesbury.*)

Seharunpore.—On inquiry from old residents of the district, it appears that the disease has been and is still on the increase, and the principal cause of this is undoubtedly owing to its direct propagation from parent to offspring.

Sreenugger.—The people of the place entertain a notion that the disease is on the increase, because they see now-a-days leprous persons in increased numbers. Not long ago, here it was a custom to bury alive with some ceremony every person affected with leprosy. A father would bury his son, and a son his father; but, since the English has commenced to rule the district, this abominable practice has stopped. The probability, therefore, is, that persons who by the ancient custom would have been buried are now allowed to live, and the consequence is that leprosy can be seen in a number of persons at the same time.

Budaon.—I believe the disease to have been on the increase during the last 40 years in Budaon, and that the greater prevalence of syphilis during the same period has contributed in some degree to its increase.—(*Dr. Harris.*)

Loodiana.—From the statements of the lepers themselves the disease seems to have decreased in this part of the country of late years. They say that 20 years ago there used to be about 100 lepers at the village. There are now about 25.

Within the last 20 years, since the Punjaub came under British rule, the sanitary condition of the towns, &c., by attention to cleanliness, drainage, widening streets, making roads, &c., has been much improved.

Bangalore.—Though during the last 10 years whilst I have been surgeon to the Mysore commission, and stationed at Bangalore, my opportunities of observation have been considerable, I have not remarked any decided difference in the frequency of the disease; but a Hindoo pundit has informed me he has noticed that leprosy has been considerably more common within the last 20 years.—(*Dr. Kirkpatrick.*)

Straits Settlements.—I have no hesitation in stating it has increased to a serious extent at Singapore, Penang, and Malacca; I have been in these parts upwards of 19 years, and can

speak confidently on this head. I have more than once brought the circumstance to the notice of Government and recommended complete segregation, and I attribute the great increase to neglect of this precaution.—(*Mr. Rose.*)

15.

What results have you observed from the hygienic, the dietetic, or the medicinal treatment of the disease? Does leprosy ever undergo a spontaneous cure? and if so, at what stage of the disease?

Are you aware what proportion of the leprous poor treated at the public expense in the colony recover wholly or partially?

New Brunswick.—The general health of the patients now in the lazaretto is greatly improved, from daily out-door exercise, the use of caustic and sulphuretted baths, and a nutritious and unstimulating diet. The plan of treatment I have adopted is that laid down by Drs. Danielsen and Boeck.

There never has been an instance here of a spontaneous cure, nor have there been any of complete recovery. Some cases have partially recovered, but the disease has always returned in a more serious form.—(*Dr. Nicholson.*)

Jamaica.—In the majority of cases, treatment is unavailing. In the earlier stage of the tubercular form, benefit is occasionally derived from hydropathic treatment, and by the application of the tinct. iodinii to the affected parts, and the use of the iodide of potash internally. Flannel should be worn next the skin, and all hygienic means to improve the general health be strictly observed. I have seen a few, but very few, cases where the disease has undergone a spontaneous cure.—(*Dr. Fiddes.*)

Antigua.—Arsenic is the only remedy which in my practice has had any effect in arresting the disease, and that only for a time. I have seen the tubercles disappear under its use, sensation restored to fingers that were incapable of feeling and using a needle, so that the patient was enabled to sew; yet the disease returned and proved fatal.—(*Dr. Nicholson.*)

Barbadoes.—None of the leprous poor in the lazaretto have recovered, wholly or partially, during the nine years I have had charge of it; nor have I ever heard of a spontaneous cure of the disease.—(*Dr. Browne.*)

I never saw a spontaneous cure of true leprosy. It can, however, be modified by hygienic regime and medical treatment, at least in its very earliest stages. When it is fully developed, all treatment seems useless.—(*Dr. Stevenson.*)

Trinidad.—During 40 years' extensive practice in this colony I have observed great benefit, and even cures, derived from treatment and regimen, when resorted to in the early stage of the malady. I have never seen a spontaneous cure.—(*Dr. Anderson.*)

Guiana.—Lepers in poor circumstances are especially benefited by proper hygienic and dietetic treatment; the disease often becomes mitigated thereby. Medical treatment may afford relief and suspension, but no cure, of the malady. It is possible that leprosy may undergo a spontaneous cure, but only at the earliest stage, previous to any ulceration.

None of the patients have recovered wholly; many, having the disease in its different forms, have had it stationary for months and years.—(*Dr. Reed.*)

I have no faith in any attempts at mitigating or curing leprosy; the only remedy available, in my opinion, is absolute isolation.—(*Dr. Pollard.*)

Cape of Good Hope.—Lepers never recover; but good food, pure air, cleanly habits, with tonics and stimulants, do a very great deal to retard the progress and mitigate the severity of the disease.—(*Dr. Ebden.*)

Crete.—Dr. Hjorth believes that it may be reasonably hoped to cure the malady in its precursory stage, and even to arrest its progress at a more advanced period, provided a radical change in the diet and general condition of the patient be insisted on. Without this all medication must be useless.

Tabreez.—Dr. Cormick believes the disease to be incurable in its confirmed state. At the commencement it may be arrested by generous diet conjoined with tonics. Sarsaparilla with bichloride of mercury is useful. Has seen great good in two cases from goat's milk whey taken of a morning, with generous diet and great attention to cleanliness.

Mauritius.—I have found that good food, an airy dwelling, and the use of chowmogree oil, appear to render the progress of the disease slower, but nothing more. I never saw or heard of any case of spontaneous cure.—(*Dr. Bolton.*)

The daily use of cold baths, a nourishing diet, principally of milk, the use of flower of sulphur with the food, &c., have to me seemed to be of use.—(*Dr. Regnaud.*)

Ceylon.—Medical treatment in all its forms, hygienic and dietetic, may occasionally arrest or protract the disease in its premonitary and incipient stages. It may prevent the progress of the disease to its more loathsome and severe forms, or render it stationary; but it never effectually cures the disease after it has once developed itself. It never undergoes a spontaneous cure.—(*T. A. P.*)

Bombay Presidency.—Several of the observers speak with some degree of confidence of the power of hygienic and dietetic measures in arresting, or even promoting a cure of, leprosy; but all concur as to the utter inefficiency of medicinal treatment.

Madras Presidency.—The general testimony of all the medical officers not only settles the inutility of drugs from which great benefit was expected, but it shows that considerable improvement in the general physical condition of the patients may be secured by placing them in favourable hygienic conditions. Good food, pure air, a rigid attention to cleanliness, and a certain amount of bodily exercise, certainly contribute more than anything else to ameliorate the health of lepers; and if the Materia Medica be indented on, it should be for such medicines as are calculated to improve the quality of the blood. Chalybeates, the preparations of iodine and iron, and cod-liver oil, promise the most benefit as internal remedies; while anointing the dry and fissured skin with emollient oils, the use of sulphur vapour baths, and the application of calamine cerate, astringent lotions, water dressing, or calaplasms to sores, according to the circumstances of each case, seem the external measures especially indicated. Reference has been made to the intercurrent attacks of other diseases, such as dysentery, diarrhœa, albuminuria, and pulmonary affections, to which these poor invalids are more or less liable, and which demand other and appropriate treatment; but, looking to the peculiar abnormal condition of these patients, it is scarcely necessary to insist on the cautious and sparing employment of such an atonic and depressing drug as mercury, and one also which operates so powerfully in reducing the proportion of red corpuscles in the blood.

Bengal Presidency.—Benefit no doubt is derived from careful attention to hygiene, diet, and medical treatment.

Preparations of iron, arsenic, creosote, the madar, are useful, but especially a change of locality.

I have never known leprosy undergo any spontaneous cure, so long as the person afflicted resided in the same place; but I have known European lepers benefited and in the end relieved by making the voyage to England, and remaining in the country some time under treatment.—(*Dr. Jackson.*)

Moorshedabad.—Good food, suitable clothing, and protection from the inclemency of the weather, have a most beneficial effect on many cases of leprosy.

Pooree.—The effect of pure air and good diet combined is no doubt remarkable in keeping the disease to a certain extent under control, as may be seen from the fact that, immediately the patients leave the hospital and go back to their dirty hovels, and live on all kinds of bad and impure food, the sores which had healed over for some time, and showed no tendency to break out afresh, inflame and ulcerate again, with a tendency to increase and implicate other structures, all going on as badly as before.

Malda.—I have known it to be much benefited by cleanliness, generous diet, and general tonic treatment, and free and fresh circulation of air; and by the use of baths of fresh or tepid water, frequently repeated according to seasons.—(*Mr. Thompson.*)

Midnapore.—In lepra anæsthetica I have found counter-irritation along the course of the spine most useful. I usually apply it after the native fashion; viz., by application of a heated iron; and the sores resulting I either keep open for some time, or else renew them in an adjacent spot; and under this plan of treatment, combined with one or more of the remedies above mentioned, sensation very soon becomes restored, and the patient is comparatively cured; but I should hesitate to say that I have ever seen a perfect cure, as I believe the disease is very liable to recur.

Leprosy, I believe, never undergoes a spontaneous cure. It remains, however, in abeyance for many years in some cases.—(*Mr. Kendall.*)

Meerut.—I have observed considerable improvement in the general condition of the patients by placing them in favourable hygienic conditions. Good food, fresh air, sufficient clothing, moderate exercise, and the cold shower-bath certainly contribute more than anything else to ameliorate the health of leprous persons. Under these they gain flesh, their skin assumes a more healthy appearance, and their lives are in a great measure rendered more comfortable, but they never perfectly recover.—(*Nund Coomar Mitter.*)

Sreenuggur.—Residence in colder climates, cleanliness of body, ease of mind, avoidance of animal food of every kind, and restriction to nutritive unstimulating farinaceous food, have been observed to be beneficial. When a leprous person takes animal food here, the disease increases within twenty-four hours, and the suffering of the person becomes very great. Medically, cod-liver oil and arsenic, when there are no signs of active cutaneous inflammation, are the only medicines that have been found productive of good in the patients that attend the out-door of the Government charitable dispensary in the district, for some time with perseverance.

Bhutteeana.—The disease appears to be aggravated by the bad plan of treatment adopted at first by the native quacks. By them the preparations of mercury, particularly the corrosive sublimate, are administered without the slightest hesitation. Venesection is also carried on to extreme by them. Frequent purgation and low diet are also enjoined, to add to the sufferings of the poor and unfortunate victim.

Loodiana.—Some of those least and most recently affected have been tolerably regular attendants at the dispensary, and by tonics, dilute nitric acid, and chiretta, slightly stimulating embrocation to the diseased skin, daily bathing, and general attention to health, they have certainly improved in condition.

Bundelkund.—Great temporary improvement is generally observed from general tonic and local stimulating treatment, but no complete cures have been observed. This refers to the treatment found to answer best in asthenic cases, which alone have come under my observation.

Khatmandoo.—In the early stages of the disease, before swelling and ulceration of the integuments have taken place, I have seen many cases apparently cured by the continued use either of arsenic in small doses combined with potash, or of the ferruginous tonics, especially the sulphate and iodide of iron, strict attention being at the same time paid to all means likely to improve the blood and strengthen the general health. I have seen many instances in which the disease has been greatly aggravated, and the most frightful sloughing induced, by the indiscriminate and profuse administration of mercury by native practitioners. In all these cases hydriodate of potash is the proper medicine to employ, and I have often used it with the greatest advantage. The natives of the country believe that animal food, as well as salt, pepper, and any spices which are eaten in a dry state, should be avoided by all persons affected with leprosy; and they recommend the free use of milk, a very sparing use of rice, and only such condiments as ginger, or other spices as require to be cooked before they are eaten.—(*Dr. Oldfield.*)

16.

What is the estimated population of the colony of ? and when was the last census taken?

Is there a general and uniform registration of births and deaths, including the causes of death? and if so, how long has such a registration existed?

New Brunswick.—By the census of 1862, the population was about 252,047.

There is no such registration, although this important requirement has been frequently urged by medical men on the attention of the Legislature.

Bermuda.—By the census of 1861, the population was 11,450;—the whites 4,624, and the blacks 6,826.

There is no such registration.

Bahamas.—By the census of 1861, the population was about 35,000.

There has been a general registration (including the causes of death?) for about 10 years.

Jamaica.—By the census of 1861, the population was 441,264;—whites, 13,816; coloured, 81,074; and blacks, 346,374.

There is no such registration. A few years back an Act for this purpose passed the Legislature, but its provisions were not complied with, and it was repealed.

Tortola.—By the census of 1861, the population of the Virgin Islands was estimated at 6,051;—whites, 476; coloured, 1,557; and blacks, 4,018.

Such a registration commenced on 1st January 1859, and has existed up to the present time.

St. Kitts.—By the census of 1861, the population was 24,440.

Within the last four years such a registration has existed; but no provision being made for the compulsory medical certification of the causes of death, it is worthless as a record.

Nevis.—By the census of 1861, the population was 9,800.
There is a general registration (including the causes of death ?) established since 1860.
Montserrat.—By the census of 1861, the population was 7,645.
Such a registration (including the causes of death in cases attended by a certified practitioner) has been in operation since 1861.

Antigua.—By the census of 1861, the population was 36,412.
For the last six years there has been a uniform registration, including in some cases the causes of death (*vide* Appendix, p. 209.)

Dominica.—By the census of 1860, the population was estimated at 25,527.
The Act for the registration of births, marriages, and deaths came into operation in 1860. The alleged causes of death are reported, but they cannot be relied upon, from the want of medical attendance in the majority of cases.

St. Lucia.—The estimated population is 26,675.
There is no such general registration.

St. Vincent.—By the census in 1862, the population was estimated at 31,755.
There is no such registration.

Barbadoes.—By the census of 1861, the population was 152,727; — whites 16,594; coloured, 36,138; and blacks, 100,005.
There is no registration of the causes of death. It is much to be desired, as numbers die without any medical treatment.

Grenada.—By the census of 1861, the population was 31,990.
There is no general registration.

Tobago.—By the census of 1861, the population was 15,410.
There is no such registration. A measure of this kind would be of great public utility.

Trinidad.—By the census of 1861, the population was 84,438.

A general registration was established in 1847, and put in force in 1858. The causes of death may be ascertained at the office of the Registrar-General.

Guiana.—There is no registration of births and deaths.
The people of British Guiana, by the census of 1861, was :—

Country of Demerara, exclusive of George Town -	- 62,195
,, Essequibo - - - -	- 27,959
,, Berbice - - - -	- 24,119
George Town, the capital - - - -	- 29,174
New Amsterdam and Stanley Town - -	- 4,579
	148,026

About four years ago a person was appointed as Commissary of Population, but after a short time the office was abolished. Such an officer is much wanted.

Cape of Good Hope.—The estimated population is about 320,000; but no census has ever been taken.
There is no such registration, and therefore no correct data to judge of the mortality from any disease.

Sierra Leone.—By the census of 1860, the population was 41,497.
A uniform registration of births and deaths, including the causes of deaths, has existed since 1857.

Corfu.—By the census of 1860, the population was 72,967.
Since 1841, medical certificates were furnished to the Health Department, and a regular register is kept in which the particulars of death are inserted.

Mauritius.—By the census of 1861, the population of Mauritius was estimated at 310,050; of the Seychelles, 7,486 ; and of the other islands, 1,569.
The births and deaths are regularly registered, and the causes of death assigned by the relatives of the deceased, but without any medical certificate, except in the case of hospitals and prisoners.

Hong Kong.—By the census of 1861, the population was 119,321.
There has been a registration of births and deaths (including the causes of deaths) from the foundation of the colony.

Victoria.—By the census of 1861, the population was 540,322.
Since 1853 there has been a uniform registration including the causes of death throughout the colony. (*Vide* Appendix, p. 224.)

New South Wales.—By the census of 1861, the population was 250,860.

Since 1856 there has been a uniform registration, (including the causes of death,) and an annual return is published. (*Vide* Appendix, p. 223.)

Tasmania.—An Act for the registration of births, deaths, and marriages, has been in force since the close of 1838. Within the last few years, it has been systematically carried out on the plan of the Registrar-General in England, owing chiefly to the zeal and ability of Dr. Swarbreck Hall of Hobarton.—(*Vide* Appendix, p. 224.)

No case of leprosy has been met with in Tasmania.

Ceylon.—In 1861 the estimated population was nearly two millions. I am not aware whether any census was ever taken. The number stated above was ascertained for the purposes of the Road Ordinance.—(*H. D.*)

There is no registration of births and deaths; but a bill is in the course of preparation at the present session of the Legislative Council, for a Registration Act to supply the desideratum long felt in the island, and which has always been an acknowledged source of difficulty in the drawing up of any vital statistics.—(*T. A. P.*)

Bombay Presidency.—The population of the British States under the Government of Bombay is estimated to be 11,790,042, and that of the Native States in the Presidency at 4,460,370. Little use, however, can be made of these figures. An approximate census of the city of Bombay was taken in May 1849, and the population was then estimated at 566,119; but little reliance, however, can be placed on these figures, as the population is remarkably fluctuating, and the numbers must have increased since 1849.

There is at present a complete and well-arranged registration carried on in the city of Bombay, which would seem to leave little to desire on this score. It was commenced, for deaths at least, in 1848; and since that date to 1860 inclusive (12 years), no fewer than 543 deaths from leprosy have been registered, being an average of 45 per annum.

Madras Presidency.—In consequence of the want of statistics, the reporters are unable to answer that important interrogatory, where it is asked to give the number of lepers, and the population in the townships and districts in which it most prevails.

Calcutta.—The estimated population of the city at the census taken in 1850 was 415,063.

There is no systematic registration of births and deaths.

Pooree.—The present estimated population of the town of Pooree or Juggurnauth may be given at 28,000 or 30,000 souls; and out of these the number of lepers, as they are seen, at 300 at least. More no doubt could be found; but, owing to the indoor confinement of females, &c., which is common to all Indians, the exact number cannot be arrived at.

The population of these provinces, when the census was taken in 1854, was 29,000,000.

Births and deaths are not registered.

Furruckabad.—The last census of this district was taken in 1851–52; the population then numbered 877,475. A new census is now (March 1863) in course of being taken. The number of lepers is estimated at 418, of which number 401 are males.

Lahore.—The population of the district of Lahore, extending over an area of 3,608 miles, was ascertained by the census of 1854 to be 649,447 souls.

There is no register of births or deaths kept up either here, or in any other part of the Punjaub.

17.

Can you state the name of the townships or districts in which leprosy prevails most, and give the number of lepers, and the population in each of such townships or districts?

Please to add any other observations which you believe may serve to throw light upon the predisponent or exciting causes of the disease, or which may bear on its prevention, mitigation, or cure.

Any documents, printed or not, descriptive of the disease, as it has been observed at any time in the colony of ————, with any reports of post-mortem examinations, or any pictorial illustrations, will be acceptable; also copies of the Annual Registration Returns, and of other works bearing on the vital statistics of the colony.

New Brunswick.—Dr. Benson, in an official report in 1862 to the Lieutenant-Governor of the colony, remarks:—"If it is allowed that the disease is hereditary, no material "benefit can arise to the province from the foundation of a lazaretto, with the expectation "of arresting the malady, as your Excellency will perceive that in several cases the patient "leaves a family of several children at home to propagate the disease after his death, and

" that hundreds of relatives are likely to be inheritors of the family curse. That it is a " most useful institution, when used as an asylum for the unfortunates, is fully borne out " by the manifest improvement in their general appearance, and by the diminished rate of " mortality among them since Dr. Nicholson has been stationed at Tracadie."

The despatch of the Lieutenant-Governor to the Duke of Newcastle contains the account of a visit paid by him to the lazaretto in 1862. Therein he says:—" There is something " almost appalling in the thought, that from the time of his admission until his death, a " period of perhaps many long years, a man is condemned to pass from youth to middle life, " and from middle life to old age, with no society but his fellow-sufferers, no employment, " no amusement, no resource, with nothing to mark his hours but the arrival of some fresh " victim, with nothing to do except to watch his companions slowly dying around him." And he adds, " It certainly appears to me that no person should be committed to the " lazaretto until a competent medical authority has pronounced him to be really suffering " from the disease, more especially as there are other disorders which to an unskilled eye " present nearly the same symptoms as those which attend the earlier stages of leprosy."

Jamaica.—In the letter of the Mayor of Kingston to the Secretary of the Government, it is stated:—" There are a great many persons in this city labouring under the loathsome " disease of leprosy, but there is no asylum or place provided by the public for their " reception or accommodation . . . . . The re-enactment of the 23rd Vict. c. 8 (*see* 26 Vict. " c. 5.), and the appropriation of 2,000*l.* per annum for a leper's home will, I trust, enable " the Government shortly to provide for the accommodation of persons for whom the deepest " sympathy is felt by the authorities of the city."

By Clause XII. of the Act, power is given to policemen, constables, &c., to apprehend any person deemed to be " afflicted with leprosy, or yaws, or other disease akin thereto," who may be found loitering about the streets, or living as a vagrant, and on a medical certificate, take him or her to the asylum, to be there detained under care and treatment.

Trinidad.—By the dispatch of the Governor to the Duke of Newcastle, July 7th, 1863, it appears that the Island Ordinance of 1841 (wherein the disease is declared to be contagious,) " for establishing an asylum for indigent lepers and providing for their cure, maintenance, and " support," is still in force. By the fifth section it is enacted that lepers wandering about, begging alms, &c., are liable to be apprehended and removed to the asylum by a magistrate's order, and there detained until he or she shall be discharged by the authority of the Governor. Any one aiding in the unlawful removal of an inmate from the asylum is liable to fine or imprisonment.—(*Vide* Appendix, p. 207, 208.)

Guiana.—I am sorry that I am not in a position to give such information as would elucidate the many and important queries submitted by the Royal College of Physicians ; and I much fear that this want of knowledge of a disease, which by the great majority of the community is believed to be on the increase, is but too general amongst the medical practitioners in this community. I have never heard of any one having made a particular study of leprosy.—*Dr. Magnet.*

As leprosy is considered generally a contagious and hereditary disease, admitting that there is a predisponent tendency to imbibe and develope it, its prevention must be a matter of police regulation, by enforcing the perfect isolation of the lepers from the healthy population. —*Dr. Reed.*

Syria and Palestine.—Consul Skene of Aleppo remarks that " Damascus and Jerusalem " afford the best field for the observation of leprosy, and reports of medical men from these " districts would be highly valuable."

The cities in which there are leper houses are Damascus, Jerusalem, Nablus, and Ramley.

Rhodes.—Dr. Mazzinghi remarks, " As long as lepers are left in a worse hygienic state " than the rest of the inhabitants, with the want of cleanliness, good food, suitable dwellings " and medical assistance, together with the apathy and indifference of the Government as to " their state, the disease will always remain in its present obscurity."

It is well known that large numbers of leprous poor are left to their fate in many parts of the Turkish Empire.

Scio.—The district that furnishes the greatest number of lepers is the northern, which contains from 15 to 20 villages, with a population of from 15,000 to 20,000. The district is mountainous, the air pure, and the water abundant and wholesome ; but the inhabitants are poorer and worse off than the rest of the population, and more exposed to frequent atmospheric vicissitudes. The repeated and long fasts of the Greek religion, occupying almost half of the year, must contribute to the development of the disease among a people so badly off as the Greeks. Among the Turkish peasants, whose life is less laborious than the Greeks, leprosy is extremely rare, although the two live in the same villages. The former practise frequent ablutions, use more animal food, and little, if any, salted fish.

Persia.—In the north of the kingdom, the districts most subject to the disease are Khumsa and Hash-rood, both elevated countries of mountain and plain.

Ceylon.—In Colombo the largest number of lepers is to be found. That town being the capital contains the largest population; and it is not unusual to transfer leprous poor from other districts to Colombo, in order to afford them the comforts of the only Leper Asylum to be found in the colony.

Of this disease, medical men have always found considerable difficulty in ascertaining the causes, and pathology has not afforded any great assistance.

Six photographic portraits of leprous patients are forwarded.

The townships and districts in which leprosy most prevails are in the North-western Province; Colombo, in the Western Province; Galle, Matura, and Ballepittinge in the Southern Province.

Mauritius.—The Governor, Sir H. Barkly, in his despatch to the Duke of Newcastle, January 5th, 1864, remarks:—"It will be seen that no public institution exists, or has ever "existed, in Mauritius for the reception of lepers; and it would appear comparatively useless "to found one now unless under far more stringent regulations—even if seclusion therein "were not made compulsory—than could be adopted consistently with the present position "of the population. In the West Indies the lazarets were everywhere abandoned as soon as "emancipation took place. * * * *

"This (the non-increase of leprosy in proportion to the increase of the population) is "probably attributable to the greatly improved condition of the Mauritius labourer of late "years; and it affords ground, I trust, for hoping that with more generous diet, and "cleanlier personal habits, the disease will gradually die out here as it has done in modern "days throughout Europe."—(*Vide* Appendix, p. 217.)

Bombay Presidency.—On account of the little attention the disease has at any time excited in India (Bombay, at least,) few data exist for the determination of this question.

(1.) The disease is certainly common in most parts of the Concan, particularly to the south and east of Bombay. In some villages, the proportion of one leper to 80 to 100 total inhabitants is certainly not excessive.

In 100 cases of leprosy now in the dhurumsalla, no fewer than 14 came from a small fishing town 10 miles south and the immediate neighbourhood, 12 from a similar locality nearer Bombay, 10 from another more inland, 10 from a similar fishing town of small size, nine patients from two others on the coast, and so on, evidencing, as I think, a degree of prevalence well warranting the attention of both official and professional men.—(*Dr. Carter.*)

Madras Presidency.—There are two excellent papers by Drs. Day and Van Someren on Leprosy, published in the 1st and 3rd volumes of the "Madras Quarterly Journal of Medical Science."

Few satisfactory *post mortems* of lepers have been made; the loathsomeness of the disease, the heat of this climate, and the prejudices of the natives, all conspire to prevent these being frequently instituted.

Bengal Presidency.—Dr. Jackson remarks:—"The malady is held in great dread "by the Europeans and natives, and the more respectable and alarmed of the former have "generally their servants inspected every month by a native doctor, to ascertain if there is "any one affected with the disease. Instances are recorded where the disease has been "sufficient to disinherit a Mussulman from succession to his property. Among the Eurasians "I have known several instances of an engagement to marry being broken off in conseqence "of its having been discovered that one of the parties was affected with leprosy.

"The present inquiry will, I have no doubt, be productive of great good, by the attention "of the several local Governments being brought to bear most beneficially upon a class of "their subjects who may now be considered on the whole as outcasts."

Pooree.—Mr. Durant has sent three photographs of lepers, showing the tubercular and mutilating forms of the disease.

No printed books or records of any kind descriptive of the disease as it occurs in this district exist, nor have any other works bearing on the vital statistics of this district ever been written, as far as he is able to find out.

Mozufferpore.—I have made five post mortems upon the bodies of leprous patients, my attention being more particularly directed to the nervous system; and neither in the nerves themselves, nor in the brain and spinal cord, have I been able to detect any lesion, either with the naked eye or by the aid of the microscope.—(*Mr. Macnamara.*)

Hazareebaugh.—Leprosy has been supposed by some to be possibly caused by eating a peculiar pulse called by the natives "teyorâ." Another species of the same dâl has certainly been proved to have a deleterious effect on those who make use of it continuously; I mean

the "kheysari," the chickling vetch or lathyrus sativus; indeed its very name in Sanscrit, "khanjakuri," implies "lame-making."—(*Mr. Delpratt.*)

Patna.—I have no exact data to enable me to reply to this question. That a leprous taint is very common among the rural population of the district of Patna is proved by the following facts:—Within the last six months I have had to examine 2,348 men, intended for the new police of the city and district of Patna: these men appear before me in a state of nudity, with the exception of a cloth about the loins; traces of leprosy are thus easily observed. The average age of the men examined was 23 years. I found a leprous taint or diathesis to exist in one out of every ten, and this proportion was rejected as unfit for service.—(*Dr. Sutherland.*)

Meerut.—In the plains, lepers are vagrants and wanderers, and are seen in every district of the North-western Provinces, but congregate more in certain localities, viz., Hurdwar, Bindrabun, and Benares. Dr. Kirton states that at the station of Mozuffernugger, with a population of 13,000, there are twelve known cases of leprosy, and in the other towns of that district the same proportion is believed to hold good.

Loodiana.—Most of the lepers I have examined said that, after the first year or two or three, they had suffered but little pain from the disease.

But they did complain of the hot weather, and stated that their condition improves, and that they are capable of much greater exertion in the cold weather than in the hot; they seem to feel the heat extremely.

Most of the men, who became affected with anæsthetic leprosy early in life, say that they are impotent; those who became subjects of the disease later in life say that they are affected in the same way, but not to the same extent.

There are no documents, printed or manuscript, describing the disease as it prevailed at any former period; nor are there any works bearing on the vital statistics of the district.—(*Mr. Butt.*)

Nagpore.—Dr. Hende adverts to the great difficulty of obtaining reliable statistical data from the natives, partly because the people cannot understand them, and yet more because they are alarmed at them, fearing that they may be preparatory to another turn of the financial screw, or that they may lead to the withdrawal of some cherished caste privilege or custom, or have some other future object in view.

That this is not an imaginary idea, I may state that when it became known that the inquiry was to be instituted, nearly 200 lepers at once left the city, in consequence of a malicious report having been spread, that, as some prisoners were about to be transported from this beyond sea, the Government wished to catch all lepers and ship them off by the same opportunity.

Akyab.—I may mention a case which I operated upon at an indigo factory in the Nuddea district of Lower Bengal, and in which, on removing the affected part, the left lower extremity at the line of junction of the lower with the middle third of the tibia, no arterial hæmorrhage followed, and the stump healed kindly and rapidly without the application of a ligature. The arterial trunks divided anteriorly and posteriorly were, as blood-distributing agents of nutrition, to all intents and purposes obliterated; and the supply of nourishment having been cut off in this way, nature had removed toe after toe, and was engaged in removing the foot at the ankle joint, when I assisted her with the knife, by removing the useless and troublesome member a little higher up.—(*Mr. Nisbet.*)

Morbid Anatomy.

Crete.—Dr. Mongeri describes the appearances he found in a man, aged 50, who had been 30 years in the lazaret, and had lost all his fingers and toes:—

"The integuments of the body were hard, coriaceous, and covered with brown prominent scales. When these were detached, numerous tubercular elevations, not visible during life, were made apparent. The larynx externally was twice its normal size; the *rima glottidis* was occupied with a mass of tubercles of various size; the mucous membrane of the larynx, trachea, and the bronchi was extremely pale. There was much bloody serum in the thoracic cavity; the right ribs were carious; those on the left side were not affected. The lungs were profoundly diseased. The stomach and intestines were very pale, and numerous tubercles were found in their tissues. The omentum, mesentery, and the abdominal parietes were so loaded with these deposits as to resemble the 'ladrerie' in swine, a very common disease in Crete."

Ceylon.—Dr. J. Davy, in 1816, made a post-mortem examination in one case in a Cingalese, 43 years old, who had been upwards of 14 years affected:—

"The tuberculated parts of the skin were thickened, and each tubercle seemed to be produced chiefly by a thickening of the cutis. The integuments of the lower extremities, and

especially of the knees and legs and feet, were generally thickened; in most places, the true skin was not less than a quarter of an inch thick. Under the thickened layer a layer of fat presented itself, which was also diffused through the cellular membrane between the muscles. Most of the muscles of the leg seemed to be converted into adipose matter, so that very little muscular fibre remained."

Victoria.—In the only post-mortem examination which has been made, Mr. Hutchison found the following appearances:—

"Body extremely emaciated; skin of a tawney colour, dry and corrugated; nose flattened from absorption of the cartilage; small abscess around the larynx, and when the skin was cut into, purulent matter welled out. The epiglottis and internal parts of the larynx were thickened, and the *rima glottidis* was nearly closed; the mucous membrane for some way down the trachea was gone."

Bombay.—Dr. Carter has given, in his valuable paper in the Transactions of the Medical and Physical Society of Bombay, Vol. VIII., "tabulated notes of the history, symptoms, and "post-mortem examination of 16 fatal cases of leprosy, with the dissection of the nerves "of the trunk and extremities."

No special or uniform morbid appearances were discovered in the brain and spinal marrow or in their investing membranes, nor in any of the thoracic or abdominal viscera, with the exception perhaps of the kidneys, which were not unfrequently more or less deeply altered. In four or five instances, there was fatty degeneration of their texture. "In five cases where "death was attributable to chronic dysentery, kidney disease was certainly present in two, and "in a third fibrinous deposit was found; in one of two just referred to abscess of the liver was "present, and opacity of the aortic valves, lining membrane of left auricle, and peritoneum: "these and other facts are of interest, but belonging as they do to the general pathology "of Bright's disease, need not be enlarged on here. I have, I believe, rather under-esti-"mated the frequency of this complication; but the connexion that exists between general "cachexia of the system, so common in the class to which lepers belong, and degeneration of "the renal organs, has yet to be definitely ascertained."

It is in the morbid changes which the nerves undergo in leprosy that the interest chiefly centres. "Enlargement and diminished opacity are the fundamental changes which the nerves exhibit. The general cellular investment, the ordinary seat of neuromatous swellings, inflammatory and other formations, is here but little altered: the amount of enlargement varies from just above the normal size (at the seat of disease, above or below it, the nerve may be smaller than natural) to more than twice that: the colour may be grey, reddish-grey, reddish-brown, or very rarely a dead opaque white: the consistence of all degrees from almost flabby to semi-cartilaginous, but generally firmer than natural; marked vascularity is uncommon; adhesions have been found, but only under exceptional circumstances.

"The cutaneous nerves are altered in a similar manner, but are sometimes less rounded and firm.

"These changes do not occur indiscriminately in the course of the nerves, but make their appearance at certain selected spots; for the compound trunks where they are most superficially placed, for the cutaneous nerves immediately after they have perforated the deep fascia. As regards the former, the nerve-trunk above the 'locus morbi' may be unchanged, below it is usually atrophied, but occasionally almost normal in appearance and structure: the apparent extent of disease may be limited to two or three inches, but it is often considerably more; in both sets of nerves the terminal branches will be found atrophied and pearly in aspect, being, in well-marked cases, evidently incapable of performing their functions."

The following is a detailed list of the nerves which Dr. Carter has found to be affected in his examinations:—

Name of Nerve.	Place of Disease.	Parts supplied.
Supra-orbital (cut.)	After emerging and onwards.	Skin of brows, forehead, &c.
Infra-orbital (cut.)	After leaving foramen.	Cheek, nose, lip, eyelid.
Mental (cutaneous)	Ditto.	Lip, chin, &c.
Superficial cervical (cut.)	After piercing the fascia.	Side of neck.
Great auricular (cut.)	Ditto.	Lobule of ear, &c.
Small occipital (cut.)	Beyond its origin.	Skin behind the ear, &c.
Descending branches of cervical plexus (cut.)	After piercing the fascia.	Skin of chest, shoulder, &c.
Circumflex (compound) cutaneous branches.	Ditto.	Skin of shoulder, arm.
Internal cutaneous (cut.)	Ditto.	Inner part of arm and forearm.
Lesser ditto.	Ditto.	Inner part of arm.
Intercosto-humeral (cut.)	After piercing side of chest.	Ditto.

Name of Nerve.	Place of Disease.	Parts supplied.
External cutaneous (cut.)	After piercing the fascia.	Outer part of forearm.
Musculo-spiral (comp.) its cutaneous branches.	Ditto.	Back and outer side of arm.
Radial (cutaneous.)	Ditto.	Back of hand, outer side.
Median (compound.)	Above elbow and above wrist.	Three outer fingers (palmar surface).
Ulnar (compound.)	At elbow, above wrist, and in palm.	One and a half inner fingers (palmar surface).
Its dorsal branch (cut.)	After piercing the fascia.	Back of hand, inner side.
External cutaneous (cut.)	Ditto.	Outer side of thigh.
Middle cutaneous (cut.)	Ditto.	Front of thigh.
Internal cutaneous (cut.)	Ditto.	Inner side of thigh and knee.
Long saphenous (cut.)	Ditto.	Knee, inner side of leg and foot.
Popliteal (compound.)	In popliteal space.	
Peroneal (compound.)	Ditto.	
Short saphenous (cut.)	After piercing the fascia.	Back of leg, outer side of foot.
Musculo-cutaneous (compound), its cutaneous branches.	Ditto.	Front of leg, dorsum of foot, &c.
Posterior tibial (compound.)	Above inner ankle.	Heel and sole of foot, &c.
Plantar (compound), their cutaneous branches.	In sole of foot	Sole and toes (plantar surface).
Anterior tibial (compound.)	Dorsum of foot.	Inner toes (dorsal surface).

The ulnar and radial nerves in the upper, and the musculo-cutaneous in the lower extremities, are oftenest affected; they supply the dorsum and inner side of the hand, and the dorsum of the foot. The branches of the fifth cranial nerve on the face appear to be least frequently affected.

The microscopic appearances of the diseased nerves are described by Dr. Carter, and illustrative drawings are given.

Skin.—The morbid change "is limited to the dermoid and subjacent tissues, and it consists in the deposit of a plasma in which granules and nuclei subsequently appear: the nerves, vessels, and appendages of the skin being necessarily inplicated, thence result many of the symptoms previously described. This deposit is obviously of the same character as that found in the nerves, and the similarity forms, in my opinion, clear proof of the unity of leprosy, for the pathological changes are also the same in the eruption."

Bones of the hands and feet.—They become affected "only where the nerve-trunks of compound function, or those supplying the deeper-seated structures, are diseased." The destructive changes observed in them consist either in interstitial absorption and atrophy of their substance, or in caries, or necrosis, of the phalanges, &c. These changes are illustrated by drawings of several specimens; the microscopic appearances are also described.

Dr. Carter has not detected any special or distinctive changes in the blood of leprous patients; but he remarks that "the chemical and vital pathology of leprosy has not been even cursorily examined."

The following are the Conclusions on the subject-matter of each interrogatory which the Committee have drawn from an examination of the entire Evidence submitted to them.

1.

The distinctive characters of leprosy are the same in all parts of the world where the disease has been observed. These are certain kinds of cutaneous eruption and discoloration, associated with a tendency to ulceration or the death of the affected parts, and with disorders of innervation, more particularly the impairment or loss of sensibility.

Two forms of the disease are very generally described in the replies, viz., the "tubercular" or "tuberculous" and the "anæsthetic."

Inasmuch, however, as the terms "tubercular" or "tuberculous" might convey the impression that leprosy is allied to *tuberculosis*, it is proposed to designate the first of these forms by the term "tuberculated."

Again, the loss of sensibility is not confined to the "anæsthetic" form of the disease, although this symptom generally occurs earlier and is more marked in it than in the "tuberculated" form.

The arrangement, therefore, of the different forms of leprosy into the "tuberculated" and the "non-tuberculated" appears preferable.

As, however, these forms not unfrequently co-exist, or succeed one another in the same patient, they must be regarded as modifications of one morbid condition.

Among the varieties of non-tuberculated leprosy are included the cases that are sometimes designated "leucopathic," characterised by white spots or blotches on the skin which are more or less decidedly anæsthetic; and also those cases in which the cutaneous eruption consists of circular or annular spots, not unlike those of *lepra vulgaris*, but in which the centre of the spots is anæsthetic, and other distinctive characters of leprosy are present. These two last-named varieties of the disease are more frequently mentioned in the replies from the East Indies than in those from other countries.

In most countries where leprosy exists, the term "leprous" is ignorantly applied to many diseases which cannot properly be regarded as true leprosy.

Hence various chronic maladies of the skin occurring in unhealthy persons living in poverty and neglect of cleanliness are often confounded with it, and the patients, being regarded as "lepers," are treated as outcasts and objects of abhorrence.

Elephantoid enlargement of the lower extremities is also in some places considered as allied to leprosy. The circumstance of the two diseases bearing the same generic name (*elephantiasis*) in medical writings has doubtless contributed to this opinion. They appear to have no real affinity with each other; although both are sometimes endemic in the same countries, and occasionally co-exist in the same patient.

2.

a. The development of the disease is not restricted to any period of life. It appears to occur most frequently about puberty, and from that period of life to maturity; but it has been observed from infancy or early childhood up to 50 years of age and upwards.

Occasionally, but very rarely, signs of the tuberculated form have been seen in the offspring of lepers at or soon after birth.*

An arrested development of the body and various forms of congenital malformation are said to be occasional results of the hereditary tendency to leprosy.

The tuberculated form is said to manifest itself generally somewhat earlier in life than the non-tuberculated form.

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* According to the observations of Drs. Danielssen and Boeck, the tubercular form begins to manifest itself generally at some period between 10 and 40 years of age, most frequently between the 20th and the 30th year; and the anæsthetic form between the 10th and the 30th year. But scarcely any period of life is exempt. These gentlemen have seen young children affected with tubercles, and their parents stated that these children had at birth blueish spots on the skin, which subsequently became tuberculous. They have also met with cases of the anæsthetic form at eight years of age; and in these cases, according to the parents, there had been bullæ on the extremities at a very early period of life.

b. Before the appearance of any visible or external symptoms there is often, for a longer or shorter period, a feeling of general malaise. This is obscurely marked and ill-defined, without any uniform or regular course, and is usually indicated by recurrent ague-like chills, occasional feverishness, and sense of internal heat; by pains, or creeping pricking sensations, or formication and itching in the limbs; by a numbness in a hand or foot, or in one or more of the fingers or toes, and by general weakness and depression both of mind and body.

Sometimes, especially in certain cases of the non-tuberculated form, there is in the early stage of the disease an intense burning sensation, and a painful tingling along the course of one or more of the nerves of a limb, increased by pinching or tapping the skin over the affected part, and sometimes accompanied by a dry fissured state of the skin, falling off of the hair, and shrivelling of the nails.

Prior to the eruption of the elevated, discoloured, and shining spots characteristic of the tuberculated form, there is not unfrequently an erythematous redness of the parts about to be affected, generally the face, attended with a feeling of heat or burning, a puffiness of the features, and increased sensibility of the skin. The duration of these symptoms varies much in different cases before the appearance of the characteristic eruption of cutaneous tubera or nodules.

The hyper-æthesia or increased sensibility is invariably replaced, in course of time, by anæsthesia of the affected parts.*

The excessive perspiration from the hands, mentioned by Dr. Jackson as occurring among some of the natives in Calcutta, deserves to be noted as an evidence of the leprous diathesis, if not of the actual disease. This symptom is also noticed by Sir Ranald Martin.

3.

No definite or satisfactory conclusion can be drawn from the evidence received on this part of the enquiry. Much will depend upon the age at which the disease may have first appeared, upon the constitution of the patient, and the circumstances of his condition. What Dr. Carter, of Bombay, says, seems to express the general spirit of the evidence received:—"As the two chief varieties of leprosy appear to be inimical to life in different "degrees, the above questions are not susceptible of a precise answer. Taking, however, "the disease as a whole, its duration may, when not extensive, extend to upwards of twenty "years; it is generally much less, five, ten, or fifteen years being perhaps the usual period; "but there is not to my knowledge, either a limited course, or a uniform termination to the "affection."†

The non-tuberculated form is usually slower in its progress than the tuberculated. In both, the disease sometimes remains stationary for many years, and life is occasionally prolonged to old age; but the arrest of the malady is more frequent in the non-tuberculated form.

Lepers do not usually die of leprosy, but most frequently of some intercurrent disease as diarrhœa or dysentery, or of inflammation of the lungs and air passages. If lepers should

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* Drs. Danielssen and Boeck, in their description of the anæsthetic form of leprosy, remark, that "there "occurs an excessive sensibility in some spots, accompanied with periodic rigors. This hyper-æsthesia, "sometimes limited to patches of the skin, at other times affects extensive surfaces, as entire limbs and a "great part of the face. It may gradually increase to such a degree that, on the slightest touch, the patient "experiences an almost electrical shock. Every movement causes violent pains, as if he were pricked with "a thousand pin points. * * * This extreme sensitiveness may continue for several years; but eventually "it gradually diminishes until it ceases altogether; and then it is succeeded by anæsthesia of the affected "parts, and this becomes more and more complete."

According to their experience, there are often in the tuberculated form several successive outbreaks and disappearances of the discoloured spots on the skin, after intervals of several weeks or months, or even of a few years, before they become stationary and persistent. These external symptoms have generally been preceded by a constitutional malaise, accompanied sometimes with a slight febrile disturbance of longer or shorter duration. In a few rare instances, the disease set in with sharp paroxysms of fever for a week or two, followed by the eruption of blueish spots on the surface. The case then either lapsed in course of time into the ordinary chronic form of the disease, or the patient was carried off by an attack of pleurisy, pneumonia, or meningitis.

In the anæsthetic form, the formation of bullæ, supervening upon a state of general weakness, lassitude, and depression, is usually among the earliest symptoms. The bullæ (the seat of which is very often the palm of the hand or sole of the foot) burst, superficial ulcers are formed, and these after a time heal. This variety of pemphigus may go on recurring, at short intervals, for a length of time without the general health being much impaired; but its occurrence is an almost infallible premonition of the development of the anæsthetic disease. The appearance, too, of white spots or blotches on the skin is a frequent, but not a constant, precursor.

† Drs. Danielssen and Boeck state that "the average duration of the tubercular form among the patients in "the hospital at Bergen from 1840 to 1847 was between nine and 10 years, and of the anæsthetic form among "the same was between 18 and 19 years. The shortest period in the case of the former was three years, "and the longest period was 22 years; in the case of the latter, the shortest period was five years, and the "longest period was 31 years."

happen to be attacked by the intermittent or remittent fevers of the country, they usually succumb.

Disease of the kidneys, attended with albuminuria, seems to be not unfrequent; and in some cases the patient sinks from general marasmus and atrophy.

The too common destitution and neglect of the sufferers greatly aggravate both the liability to the above maladies and the danger of their occurrence.

It has been remarked that the children of leprous persons are less amenable to medical treatment for other maladies than other children of the same age and condition.

4.

The general belief seems to be that the disease is decidedly more frequent in the male than in the female. It is certainly much more frequently seen among males; but the number of cases brought under observation is stated, by several observers, to be no criterion of the actual frequency or prevalence of the malady, as the women in all the countries where it is most common live much more secluded than the men, and are moreover more unwilling to expose themselves when afflicted.

In some leper asylums in the West Indies, the number of the two sexes is about the same. Several of the respondents are of opinion that the disease occurs quite as frequently among females as among males, and a few state that it is most common among the former.

Of 543 deaths among leprous persons at Bombay during 12 years, 409 occurred in males.*

5.

In hot climates, the disease appears to be very much more frequent among the dark than among the white population. Most of the cases among the latter are said to occur in persons born in the country, or in those who have long resided in districts where the disease is endemic.

In the West Indies, the relative frequency of the malady among the different races is not easily determined in consequence of the small proportion of the white to the coloured inhabitants, and their still smaller proportion to the negroes; and also because when white persons become affected, they are either secluded from society, or remove to another country.†

In Southern Africa the greatest sufferers are stated to be the Hottentots, next the negroes, and lastly the white natives.

In Egypt, the Bedouins are said to be exempt.

In the Mediterranean Archipelago, the poor Greek population appear to be much more frequently affected than the Mohamedans.

In India, all the native races appear to be liable to the disease. The European residents are very seldom attacked, the Eurasians more frequently.

Whether, and to what extent, the members of the Jewish nation are more liable to the disease than other similarly conditioned races are points requiring further investigation. The statements received from Jamaica, St. Vincent, and Cairo, on this point, are at variance with those from Damascus and Bombay.

6.

The great majority of cases of leprous disease in all countries occur among the lowest and poorest of the people; the better conditioned classes are, however, far from being exempt, their liability appearing to vary a good deal in different countries. In a few of the replies it is surmised that the latter are nearly as liable to the disease as the poor.

Leprosy appears to be most frequently met with in low and malarial districts, especially on or near the sea-shore; but it is by no means confined to such localities, as it often occurs

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* Of 906 leprous patients treated in St. George's hospital at Bergen, Norway, from 1841 to 1846 inclusive, 461 were males and 445 were females.

† "In the asylum at Barbadoes, 27 inmates are black, 18 coloured, and one white. But I am confident," says Dr. Browne, "that the disease is far more prevalent among the white population than the above number "indicates, the aversion to accept the charities of the institution being much greater in that race than in the "others. The number of 18 among the coloured would seem to point to a greater prevalence among them "than among the blacks, the relative proportion (according to the last census) being nine coloured to 25 "black, and the proportion among the inmates of the lazaret being 9 to 13."

in inland and hilly districts; as among the Hottentots, the mountaineers of Lebanon, the inhabitants of the highlands in the north of Persia, and of various elevated regions in Hindostan.

Lepers are more frequently to be seen in towns than in rural districts; being attracted to the former in search of the means of subsistence by mendicancy or otherwise.

With respect to the dwellings of the leprous poor, they are for the most part in every country as miserable and unwholesome as they well can be.

The personal uncleanliness of the sufferers is on a par with the filthiness of their abodes. Ablution of the body seems to be seldom or ever thought of, so that the skin is often encrusted with the impurities of years. Their clothing too, equally foul, is seldom taken off by night or by day, and is kept on as long as it will hold together.

The food of the classes chiefly affected with leprosy is almost invariably described as being poor and innutritious, generally unwholesome, and often quite insufficient in quantity.

The frequent or constant use of fish, much salted, and often tainted or semi-putrid, is perhaps more frequently referred to as a cause of the disease than that of any other article of food. It is pointedly mentioned in the replies from the West Indies, the Cape of Good Hope, Egypt, Crete, Corfu, Calcutta, and Ceylon.

The want or deficiency of fresh meat and vegetables in the diet is very generally noticed.

The consumption of rancid oil in large quantities is believed by some respondents to be an aggravating, if not an exciting, cause of the malady.

In India, the use of certain sorts of pulses, especially when in an unsound or damaged state as they frequently are when eaten by the poor, is widely believed to favour the occurrence of leprous disease.*

7.

All observers agree that an unwholesome and insufficient diet, exposure to atmospheric vicissitudes without sufficient clothing, residence in foul, damp dwellings, and the neglect of personal cleanliness serve to aggravate the disease and to accelerate its progress; and, on the other hand, that it is greatly retarded and mitigated by more favourable conditions in these several respects. Intemperance, sexual excesses, and whatever tends to lower the vital energies and to impoverish or deteriorate the blood are always hurtful. "The mental depression arising from the enforced separation from their families and friends, "and being obliged to live with other leprous persons," are enumerated among the *lædentia* by Dr. Mazzinghi, of Rhodes; and Dr. Bayard, of New Brunswick, mentions that "many of "the lepers in the lazaretto thought their disease was aggravated by their imprisonment on "Sheldrake island."

The use of certain articles of food is believed to be notably hurtful. Besides salted fish, the frequent use of salted pork is mentioned in several of the replies, and "especially of its "grease, of which large quantities from pigs that feed on all kinds of offal are imported "from Calcutta into Mauritius."—(*Mr. Ford.*)

Lepers have assured Consul Rogers, of Damascus, "that oil taken in cookery or in salad "causes great pain, and an increase of the disease."

Among other circumstances which are alleged to aggravate the disease, special mention is made by some observers of the incautious administration of mercury, a medicine which has been often used in its treatment.

8.

There is an almost unanimous concurrence of opinion that leprosy is often hereditary; but that it also frequently occurs in persons in whom no hereditary tendency can be traced,

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* In Norway, most of the cases of leprosy occur among the very poorest classes of the inhabitants, and especially among those living round the shores of the deep bays or fiords on the west coast. The huts of the people, generally of but one low narrow room, in which all the family live, with a small window that is not made to open, are usually planted down in a damp site and surrounded with all sorts of filth. Their food consists almost entirely of fish, fresh, or very much salted, meal, potatoes, and badly made cheese. They very rarely can get any fresh meat. The lepers themselves very generally ascribe their malady to constant exposure in the cold, damp, and wet weather of the climate, frequent at all seasons, and especially in the long severe winters. When engaged in fishing, or in pasturing, they often get thoroughly wet to the skin and chilled, without the means or opportunity of drying their clothes or obtaining any warm nutriment. "If "to these conditions we add," remark Drs. Danielssen and Boeck, "that personal cleanliness is very much "neglected among our peasants, we can readily discover causes capable of engendering the disease, where "other circumstances favour its occurrence."

appears to be equally certain. In what proportion of cases the disease is of hereditary origin, it is often extremely difficult, if not impossible, to determine.

Among the children of lepers, the form of the disease transmitted to the offspring is not always that present in the parent. One child of a family may have the tuberculated, and another child the non-tuberculated, form of the malady.

Leprosy is stated not unfrequently to pass over one generation, and to reappear in the next.

In China it is said to become mild in the third generation, and to run itself out in the fourth. For this reason, lepers usually intermarry only with those in whom the same grade or degree of the disease exists; *e. g.* a leper of the fourth generation, having no external appearance of the disease upon him but known to be of leprous descent, will only marry a woman similarly circumstanced; their progeny is then considered free from taint.

That instances frequently occur where one member only of a family is affected, the other members remaining free from any trace of the disease, is obvious from the experience of observers in all parts of the world.

" Sometimes," observes Dr. Regnaud of Mauritius, " certain members of a leprous family " appear to be exempt, but even they not unfrequently exhibit glandular lymphatic swellings, " indicating a slight degree of or tendency to the disease, and the offspring of such persons " frequently become affected."

It is justly remarked by Dr. Imray of Dominica, when speaking of hereditary predisposition, that " as the disease may appear at any age, it would be necessary to carry the period of " observation over the lives of each individual member of a family, in order to determine the " point with precision." *

9.

Leprosy is very generally considered to be a disease *sui generis*, quite independent of and unconnected with any other disease.

The opinion that leprosy may be excited by the poison of syphilis, or that the two diseases are related to each other, is held by several observers, especially those reporting from India. Dr Stevenson of Barbadoes also says that " leprosy is most common in the children " of syphilitic patients."

On the other hand, syphilis is stated to be unknown in the districts of New Brunswick where leprosy occurs, and also to be of rare occurence in the villages of northern Persia, where the latter disease is not uncommon.

Some venereal tuberculated affections in their outward characters appear to resemble very closely cases of tuberculated leprosy, so that the two diseases are liable to be mistaken the one for the other. The diagnosis will of course be more difficult when the two morbid states co-exist in the same patient, as they not unfrequently do in many parts of India and elsewhere.

The yaws is a disease which is not met with in many countries where leprosy is common. It was formerly very common in several of the West India islands, but of recent years it has become comparatively rare.

Scrofula and leprosy are considered by several of the respondents to be allied or congenerous diseases.

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* Drs. Danielssen and Boeck have given two tables to show the relative frequency of the influence of hereditariness in the cases of leprosy treated in the hospital at Bergen. Of 145 cases of the tubercular form, hereditariness could be traced in 127 instances; and in 68 cases of the anæsthetic form, it could be traced in 58 instances. " From these tables," they remark, " it will be seen that out of 213 leprous patients, the " disease was hereditary in 189 (185 ?), and that in 24 (28 ?) cases only it was of spontaneous development. " Moreover, it will be seen that the hereditariness was more frequent on the maternal than on the paternal " side, and that it was found to be more frequent (plus répandue) in the collateral line than in the direct line. " What deserves particular notice is the mode of its propagation in passing through successive generations. " The singular result is remarked that the disease not only passes over some generations, but that it manifests " itself in the second and fourth generations with much greater intensity than in the first or third " generations. If it has spared the first generation, it as a general rule appears in all the individuals of the " second, who transmit the germ of the disease to succeeding generations. Tolerably often, it seemed to pass " over the second and third generations, and to reappear in the fourth generation, and then to spread in all " directions, so to speak, with a new energy." * * * * " We have already said that leprosy may also " be acquired. We speak of those cases where the malady declares itself in persons born of healthy parents, " in whose families the disease had never been seen, but who have resided, for a longer or shorter period, " in countries where it is endemic, and who have lived under conditions liable to occasion its development."

Owing to the fact that the *Elephantiasis Arabum*, (the "Barbadoes" or "Cochin leg,") is common in many countries where leprosy is endemic, and that in some places it is frequently found in leprous patients, it has been conjectured by a few observers that the two diseases are allied affections.*

10.

The all but unanimous conviction of the most experienced observers in different parts of the world is quite opposed to the belief that leprosy is contagious or communicable by proximity or contact with the diseased. The evidence derived from the experience of the attendants in leper asylums is especially conclusive upon this point.

The few instances that have been reported in a contrary sense either rest on imperfect observation, or they are recorded with so little attention to the necessary details as not to affect the above conclusion.

That leprosy is rarely, if ever, transmissible by sexual intercourse, when one of the parties has no tendency whatever to the disease, is the opinion of the great majority of the respondents who have had the largest opportunities of observation.†

11.

Great diversity of practice exists in this respect.

In many countries, including some British colonies, the slightest ascertained taint of the malady carries with it a compulsory seclusion tantamount to banishment from the rest of the community, or even to perpetual detention in a lazaret.

Where an enactment to this effect exists, it has been found extremely difficult, and often scarcely possible, to enforce its provisions for the complete separation of the diseased.

In most of our West Indian colonies, lepers may be apprehended and detained in an asylum when they are found as mendicants or vagrants loitering about the streets or highways. Enactments for this purpose have been proposed or passed even within the last few years in some of these colonies.

In the villages of Syria, lepers are required to go to Damascus or some other town where there may be a public asylum; and if they will not conform to this rule "they are made to live in a cave or hut outside the village, where they remain in perpetual quarantine."—(*Mr. Rogers.*)

Throughout India, no compulsory segregation of leprous persons is ever attempted, and no restriction or restraint whatever is imposed on their free intercourse with the rest of the population. In Calcutta "they are to be seen at all the bazaars, where some of the "principal beggars are lepers."—(*Dr. Jackson.*)

When the disease occurs in persons of the well-conditioned classes. they very generally seclude themselves or are withdrawn from society by their relations, or they leave the country altogether. So thorough is the conclusion that such persons, living with their families, have often been supposed long dead, even by parties visiting in the house.

12.

The public provision for the leprous poor is almost always scanty and insufficient.

The condition and arrangements in leper hospitals or asylums, where such exist, vary much in different colonies. Most frequently no establishments of the sort exist.

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* "We hope," remark Drs. Danielssen and Boeck, "that our description of the leprosy has shown that it "is a peculiar disease, which, when fully developed, cannot be confounded with any other. The spots, "indicative of the tuberculous form, have been in the early stages regarded as *pityriasis;* but this confusion "will speedily be cleared up. On the other hand, we have seen cases of this form when such spots existed, "as well as at a later stage when distinct tubercles had appeared, mistaken for a syphilitic affection and "treated accordingly. This error is very serious; for, besides the loss of time incurred in the use of "inappropriate treatment, the administration of anti-syphilitic medicines is apt to occasion very hurtful "consequences, which may speedily lead to the death of the patient. An exact knowledge of the two "diseases will prevent such a blunder."

† Drs. Danielssen and Boeck state, that "Among the hundreds of lepers whom we have seen daily, not a "single instance has occurred of the disease spreading by contagion. We know many married persons, one "of whom is leprous, cohabiting for years without the other becoming affected. At St. George's hospital, "many of the attendants on the inmates have lived there for more than 30 years, and are quite free from "any trace of disease." * * * "As the result of our observations, we have only to deny the contagiousness "of leprosy."

The asylum in New Brunswick is surrounded by a high fence, 12 feet high, to prevent the escape of the lepers during the night. "Its situation is dreary in the extreme. Until of late years the building, called by courtesy a leper hospital, was little better than a mere prison."—(*Lieut.-Governor Gordon.*)

In some of the West India colonies a leper asylum has existed for a considerable length of time; in others one has been established only of recent years. In Jamaica no regular asylum seems to have been hitherto provided. In Kingston, the principal town, a few lepers are lodged in an old building which is "miserably dilapidated and filthy, and the condition of the inmates deplorable. A weekly pittance is allowed them; they spend the day begging about the town, and return to the hovel at night."*—(*Dr. Fiddes.*)

Prior to the emancipation of the slaves, the leprous poor in the West Indies were kept on the estates to which they belonged.

At the Cape of Good Hope, there is an asylum into which are received not only lepers, but also other poor persons afflicted with various chronic maladies, and likewise lunatics. Occasionally, but rarely, lepers are admitted into the general hospital.

In Corfu "nothing is done for their relief; they are left to their misery and sufferings. They are not admitted into the general hospital."—(*Dr. Tygaldos.*)

In Mauritius no provision is now made. Until recently, the leprous poor were sent off to one of the Seychelles Islands, and there treated in an asylum. They are not admitted into the general hospital at Port Louis.

In Victoria, Australia, leprous patients are received into the general hospital.

There are a few special asylums for the leprous poor in the three presidencies of India and in Ceylon. They are also readily admitted into the general hospitals when labouring under any intercurrent disease.

13.

The information on this point is very imperfect, nor does it afford any criterion of the extent to which the disease exists among the poorer classes of the communities enumerated.

In the different West India colonies, the number of leprous persons maintained at the public expense appears to vary from a dozen to fifty or upwards.

In the lazaret at the Cape of Good Hope, the number averages between fifty and sixty.† At Sierra Leone, the number appears to be considerably higher.

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* The condition of the leprous poor in other parts of Jamaica appears to be much the same as in Kingston:—

"I have alluded, in my letter to the Governor, to the condition in which the victims of this dreadful disease, tubercular leprosy, are left in some parts of the island. I can never forget the painful impression left on my feelings, from the sight of the miserable creatures I saw in the huts near Falmouth. They seemed to be regarded as pariahs or outcasts, to be driven from the fellowship of their fellow creatures, and herd only among themselves. There were between 20 and 30 in number, of both sexes and of all ages, from the grey-haired old negro resting with both hands upon a staff, without any visible or outward disease except as indicated by dirty rags around his ankles, down to the naked child of three or four years of age, seemingly healthy if it was not for the scaly eruption on the face and forehead. The father of the child was there also, with a similar cutaneous eruption. Some had lost fingers or toes; others were affected with an elephantoid enlargement of the leg, and with large spreading sores on their feet and ankles, which were swathed round with filthy rags. There was one case of cancer-like ulceration of the angle of the mouth; already, a considerable portion of the side of the face was eaten away, exposing the teeth and inside of the mouth. Among the group were two old women, and a young one of three or four and twenty years of age. She was well made, and to the eye presented a fine healthy appearance; but she had lost the fingers of both hands down to the metacarpal bones. She sought to conceal the deformity, and could with difficulty be made to reach forth her maimed hands.

"The expense *to the parish* for the maintenance of these poor creatures was, I learned, about 7*s.* a-week for each.

"In the parish of Trelawny there are, in different parts, numbers of persons affected with the disease, as appears from a remonstrant petition addressed by the inhabitants of the inland township of Stewart Town, and now lying before me, to the parochial authorities in March 1848. Mr. Kidd, who gave me the document, stated at the same time that since that date the number of lepers in the district has decidedly increased, and that most of them are living with their families. In other parishes, too, the disease is of frequent occurrence."—*Report on the Cholera in Jamaica, and on the Sanitary Condition of the Island, by Gavin Milroy, M.D.* (Printed by order of the House of Commons, 1853.)

† "The entire number of patients in the hospital near Cape Town, at present is not less than 300, of whom 70 are lepers, 75 are insane, and the rest sufferers from a variety of diseases, blind, lame, and otherwise infirm persons. Among the lepers, only two are of European extraction; but of the other inmates, at least one fourth consists of Europeans,—English, French, Italians, Germans, Danes, Swedes, Hungarians, and even one Turk. * * Some of these, the most pitiable poor creatures, who are deprived of the use of their feet, and have lost all their fingers, so as to be unable to hold crutches, may be seen creeping painfully along on their knees and the palms of their hands to the meeting house. One man, who has entirely lost the use of his lower extremities, actually thrusts himself along in a prostrate posture."—*Reports of the Moravian Missions, for* 1856 *and* 1858.

In Mauritius, where no public provision is made, the number of inmates in the Hospice St. Lazare, which is entirely supported by private charity, has in the course of six years risen from 12 to 52.

The data on this head from the different presidencies of India do not admit of being generalized.

14.

The replies from the different West India colonies on this head do not agree. In some it is confidently stated that the disease has increased of late years, *e. g.* in Jamaica, the causes assigned for the increase being the free "sexual intercourse among leprous persons, and the degraded condition of the majority of the people in their dwellings, food, and mode of life"—(*Dr. Fiddes*); and in Guiana, where the increase is in part attributed to many of the immigrants who have come from Madeira, India, China, and Africa, being affected with the malady on arrival in the colony.

In a few of the islands the disease is believed to have declined within the last 20 years, as in Tobago, where the decrease is ascribed "to the circumstance of the lower orders being better housed, fed, and clad, and to their comparative immunity from depressing mental causes"—(*Dr. Elliott.*)

In several islands the disease is considered to have been stationary during the period mentioned.

A similar diversity of belief respecting the subject of this interrogatory exists in other colonies, and also in different foreign countries. From the general want of trustworthy statistical data, no accurate conclusion can be formed as to the increase or diminution of the malady of recent years.

15.

There is a unanimous accord of opinion that the greatest benefit is derived from the adoption of hygienic measures, and that by improving the general conditions, physical and moral, of the leprous poor very much may be done to retard or arrest the malady in its early stages, and also to mitigate its severity when more fully developed.

Medicinal treatment is universally admitted to be of no avail unless combined with the regular use of a nutritive unstimulating diet, suitable clothing, protection against the vicissitudes of weather, personal cleanliness, and exercise in the open air. There is certainly no medicinal substance, vegetable or mineral, which exerts anything like a direct or specific effect on the malady.

The medicines which have been found most useful are tonics and alteratives; of these the preparations of iron and of iodine appear to be generally preferred. Arsenic is also mentioned with favour by some observers, but it seems to be of more doubtful utility. Certain oils, especially the oil of the *chaulmoogra odorata* and cod-liver oil, are reported to have been given with advantage; also sarsaparilla, mudar (*calotropis*), and other reputed vegetable alterants.

The fact that the free administration of mercury in the treatment of leprosy, and of persons having a leprous diathesis, is liable to be productive of very hurtful consequences has been already alluded to. The immoderate use of the drug by the native doctors of India is known to give rise to most disastrous effects.

The systematic use of baths, simple, saline, or sulphuretted, appears to be decidedly, beneficial.

Counter-irritation over the spine by the application of a hot iron is mentioned as having proved useful in diminishing the anæsthetic symptoms.

The evidence is all but unanimous that leprosy very rarely, if ever, manifests any tendency to a spontaneous cure.* When fully developed, a complete recovery is not to be looked for.

* Dr. Fiddes, in his paper in the *Edinburgh Medical Journal*, relates a case of tuberculated leprosy in which "nature proved adequate to expel the disease, and to remove the tubercles at the same time." After an attack of erysipelas of the entire body, followed by desquamation of the cuticle in large and successive laminæ, "the tubercular elevations disappeared from the face and from every other part of the surface, the "skin being left with slight scars, tender in some places, and rather insensible in others. The deep sinuous "ulcers on the bottom of the feet granulated and cicatrised, and the voice regained in great measure its "natural tone. The beard, eyelashes, and eyebrows were not restored, so that he retained the morbid "peculiarity of his expression, which was increased by the dry and bleeched-like condition of the face, from "want of the unctuous exudation of the sebaceous follicles; but he was relieved of the disease, and was able "soon afterwards to undertake the duties of a Government situation which he held for some years, and "during that time there was no tendency to a relapse. He left Jamaica eventually, so that I am unable to "trace his history further."

It is quite apparent, however, that the progress of the disease may often experience a marked retardation or arrest when the patient is maintained in a favourable hygienic condition.*

16.

It appears that a census of the population was taken in most of the British colonies in 1861.

Very few indeed of the colonies have the advantage of a general or uniform registration of births and deaths, including the causes of death. Of the West India colonies it appears that in several steps have been taken within the last few years to establish such a registration; but as no details have been received by the Committee, it is impossible to state what have been the statistical results. Antigua is the only island from which any report has been received (*vide Appendix*, pp. 209, 211) respecting the annual birth and death rates among the inhabitants. It is very much to be desired, in the interest of the physical and moral amelioration of the West Indian population generally, that similar annual reports should be furnished by all the other islands.

In the Australian colonies of Victoria and New South Wales, and also in Tasmania, a systematic registration of the births, marriages, and deaths, upon the plan of the Registrar-General of England, has been carried out during the last ten or twelve years.

Bombay appears to be the only presidential city in India in which a complete and well arranged registration of deaths is established.

17.

No sufficient information has been received relative to the first portion of this interrogatory.

The reports of post-mortem examinations made by Dr. Carter, of Bombay, are of great interest. They tend to confirm the general accuracy of the researches of Drs. Danielssen and Boeck, who were the first to investigate this field of pathological inquiry, and to whom the profession is so much indebted for the light they have thrown on the nature and medical history of leprosy. We subjoin a summary† of the principal morbid changes which they

* Drs. Danielssen and Boeck have found the internal use of mercury to be decidedly prejudicial in cases of leprous disease; it is liable, they say, to produce a scorbutic state of the system. In conjunction with a regulated nutritious diet, and the use of baths, saline or sulphureous, or of sea bathing, cod-liver oil, together with some preparation of iron, iodine, or arsenic, are the medicaments which in their experience have been most useful. In the anæsthetic form of the disease more especially, the repeated application of the cupping glasses and of moxas along the line of the spinal column has been of marked advantage in relieving the lesions of innervation, whether of increased or diminished sensibility.

On the question as to the cure of leprosy, these gentlemen remark:—"From our experience and knowledge "of the malady we can declare that the more the disease is developed, the more unfavourable must be "the prognosis; nevertheless, far be it from us to say that it is incurable, even in its advanced stage; for we "have seen that nature had brought about a cure in several instances where the patients were grievously "affected."

† *The Tubercular Form.*—In the developed stage of the disease, the corion or cutis vera of the affected parts is tumefied and thickened; on squeezing it between the fingers a yellowish-white, viscid, or gruelly fluid exudes. The sub-cutaneous cellular tissue is infiltrated with a gelatinous or lardaceous effusion, firmly adherent to the corion. The sub-cutaneous veins and nerves are found thickened and enlarged from the deposit of this effused matter on their outer surface. In the advanced stage of the disease, the deep-seated as well as the superficial nerves, especially when lying near to ulcerations, are very much thickened and enlarged, in consequence of the results of inflammation of their sheaths.

The mucous membrane of the nares, fauces, and larynx is swollen, occupied with tubercles, soft, and of a yellowish colour, and often ulcerated. The opening of the larynx is frequently the seat of morbid deposit, so that the *rima glottidis* is sometimes nearly closed up. Tubercles are occasionally found on the mucous lining of the trachea and large bronchi. The cervical glands are occasionally much enlarged.

The substance of the lungs is seldom altered, but the pleura is often much thickened, in consequence of tuberculous deposits in its cellular tissue.

The sub-peritoneal cellular tissue may be similarly affected as the sub-pleural. The mesenteric glands are very generally more or less enlarged. Isolated rounded ulcers are occasionally found on the inner surface of the intestines. The liver is sometimes the seat of the deposit of tubercles. The kidneys are almost always found more or less seriously affected in the advanced stage of the disease, the morbid changes being usually those characteristic of albuminous nephritis.

Within the cranial and vertebral cavities no distinct or uniform morbid changes have been detected, either in the substance of the brain or spinal marrow, or of their investing membranes.

The Anæsthetic Form.—When the disease has been completely developed, and the paralysis of the muscles as well as of the skin has been decided, the skin is often found to be very much attenuated, all the fatty matter to have disappeared, and the substance of the muscles to be atrophied. The cellular tissue in the parts surrounding the seat of ulceration or necrosis is infiltrated with a serous or lardaceous deposit. The nerves which traverse this infiltrated tissue, as well as the deep-seated ones, are excessively swollen; their sheaths are filled with a firm albuminous matter in which the ultimate nervous filaments are imbedded; alterations

observed in the numerous dissections they made of leprous patients who died in the hospital at Bergen.

Photographs of leprous patients have been received from Bombay, Ceylon, and Hong Kong; also from Hong Kong two casts showing the mutilations caused by the disease.

Besides the countries and districts enumerated in the "Abstracts" the following list of those in which "it has been ascertained that leprosy is unknown," at the present time, has been received:—

Nova Scotia.
Prince Edward's Island.
Turk's Islands.
British Honduras.
Falkland Islands.
Gibraltar.
Malta.
Alexandretta and Latakia.
Trebizond.
St. Helena.*
Natal.
Labuan.
Western Australia.
Queensland.
Tasmania.

It seems far from improbable that the disease may exist in some of the above-mentioned places, although the fact was unknown to the respondents.

The diffusion of the malady in various regions of the world, not comprehended in the present inquiry, is shown in the "Sketch of its geographical distribution at the present time," given in the Appendix.

Its continued prevalence in some provinces of a few countries in Europe while it has, for several generations, disappeared from other countries which were once infested with the disease, is a fact of much significance in respect of the probable causes that favour its development and persistence. The Scandinavian peninsula affords a signal example. In a portion of Norway it appears to be as rife as it ever has been†; whereas the conterminous country of Sweden is comparatively exempt. Several districts in the south of Europe—in Spain, Portugal, and Italy—are still affected with it to a considerable extent.

A few rare cases of indigenous origin have been met with in the British Islands during the present century;‡ but by far the majority of the examples of the disease which have been recognized recently in this country have occurred in persons who either had been

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which are considered to be the result of inflammation of the nerves, and are identically the same as those which are found in the tuberculous form of the disease. Under such circumstances, the axillary and inguinal glands are often much enlarged.

The central organs of the nervous system are usually the seat of notable morbid changes. These appear to consist chiefly in congestion of the posterior or dorsal veins of the spinal marrow, effusion of an albuminous serum within the arachnoid membrane and between it and the dura mater, adhesion of the arachnoid membrane to the pia mater, and consolidation or hardening of the substance of the spinal cord at the part affected. Generally, it is somewhat contracted in size, and sometimes it is so atrophied as not to be much larger than a quill in its dimensions. The cineritious substance is much altered in aspect, having acquired a dirty yellow colour, so as to resemble a good deal the medullary substance. The roots of the nerves within the vertebral canal are invested with albuminous exudation. Sometimes the axillary and the ischiatic plexuses, and the principal nerves issuing from them, are found to be visibly atrophied.

The above changes are always most conspicuous in the cervical and the lumbar regions of the spinal marrow.

The morbid appearances discovered within the cranial cavity appear to be similar in character to those which exist within the spinal cavity, but in a much less decided or advanced degree. Whenever there had been well marked anæsthesia of the face, the Casserian ganglion was always found to be the seat of some change. There was usually sero-albuminous effusion around it, and this was sometimes so considerable that the dura mater was distended and bulged out at the part; the nervous filaments of the ganglion seemed to be glued together by the exuded matter.

With respect to the condition of the blood in leprous patients, the most marked abnormal change from the standard of health appears to consist in the excessive quantity it contains of albumen and fibrine; these are precisely the principal elements, more particularly the albumen, in the morbid effusion with which all the pathological alterations, characteristic of the disease, are connected. The same sanguineous dyscrasia is found in both forms, the tuberculous and the anæsthetic, of leprous disease.

* Mr. Fowler, Colonial Surgeon, states, that "a few cases of leprosy have occurred at St. Helena at various "times within the memory of those living, but there are no cases now on the island."

† The number of ascertained leprous patients in Norway in 1858 is stated to have been 2,087.—*Report of the International Statistical Congress* in 1862.

‡ Reference may be made to a case in a youth from one of the Hebrides, admitted into the Edinburgh Infirmary, (*Edinburgh Medical Journal*, July 1855); to a case in Guy's Hospital, described by Dr. Gull in the *Hospital Reports* for 1859 (3rd series, vol. v., p. 147); and to the case related by Mr. Nourse, of Brighton, in the *Medical Times and Gazette*, September 2nd, 1865. A case of the mixed form of the disease, occurring in a poor Irishwoman long resident in London, and who had never been abroad, was received into Guy's Hospital, under the care of Dr. Owen Rees, during the present summer (1866).

born in one of our tropical possessions, or had been long resident there.* Such instances appear to be less infrequent than is generally imagined; and it also seems not improbable that some anomalous forms of intractable skin disease may be vestiges or obscure manifestations of a partially leprous diathesis.

The great extent to which leprosy prevails in many distant dependencies of the British empire, and the inevitable destitution and mendicancy that attend its existence among a population, render its thorough investigation a matter of special duty on the part of the Government of this country. In many regions of India the lepers may be counted by thousands, and in several of our West India Colonies also the number of the afflicted is very large.

As the disease is known to be prevalent in the colonial dependencies of various European countries, and the Committee are not aware that it has been made the subject of official inquiry by any of those States during the present century, they would submit that the attention of other Governments, and more particularly those of France, Spain, Portugal, and Holland, should be drawn to the importance, in the interests of science and humanity, of further investigations being made respecting it.

Much of the obscurity and error which have hitherto prevailed in regard of the malady has unquestionably been owing to the general ignorance as to its essential or distinctive characters, and also to the vague use of the undefined terms "lepra," "leprosy," and "elephantiasis," as well as of such vernacular appellations as "mal rouge," "mál de la rosa," and "coco-bay," &c. Diseases having no affinity either with true leprosy, or with one another, have been confounded together by want of precision in their nomenclature.

The confusion has been increased by the two-fold meaning of the term "lazaret." Originally it denoted exclusively an asylum for lepers, who were believed to be objects of peculiar care to St. Lazarus; but subsequently it was applied to all places for the detention of persons labouring under infectious distempers, especially the oriental plague, and who were enjoined to be kept apart from the rest of the community for a specified period. The popular belief as to the contagiousness of leprosy,—which is not unfrequently spoken of as "the plague of leprosy,"—thus became more rooted than ever.

With respect to the employment of measures for the compulsory segregation of leprous persons, the opinion expressed by the Committee in their communications to the Colonial Office on May 21 and July 20, 1863 (vide p. iv.) has been much strengthened by the evidence subsequently received.

That leprosy is essentially a constitutional disorder, indicative of a cachexia or depraved condition of the general system, and manifesting itself by the outward signs described at length in the "Abstracts," and that the hope of extirpating the malady amid a people must rest mainly on the adoption of measures for ameliorating their general health and amending their physical condition, can scarcely admit of doubt.† The experience of the past appears to point, in an unmistakeable manner, to an improved diet, as one of the principal factors in its gradual decline and eventual cessation in most parts of Europe. During the middle ages, and down to within the last hundred or hundred and fifty years, the food of the mass of the people was generally unwholesome and innutritious. The scarcity of fresh meat and the ordinary consumption of highly-salted meats, scant supply of fresh vegetables and fruits, and the inferior and often unsound character of the bread in common use, together with extremely filthy habits, could not fail to act injuriously upon the general health, and predispose them to endemic chronic maladies, as well as to the occasional ravages of epidemic disease. It seems indisputable that, as the agricultural and horticultural condition of Britain advanced, and the diet of the working classes was bettered by the more frequent and abundant use of fresh animal and vegetable aliments, and of more wholesome cereals, leprosy became less and less common, until it altogether disappeared, except in scattered and occasional instances.‡ In Ireland, too, notwithstanding

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* *Vide* a paper in *Guy's Hospital Reports* (3rd series, vol. ii., p. 141), and also one by Mr. Hutchison in the *London Hospital Reports*, 1865. A well marked case of tuberculated leprosy was admitted into University College Hospital in 1864, under the charge of Dr. Hillier. It is described in the *Transactions of the Pathological Society*, vol. xvi., and at more length in *Dr. Hillier's Handbook of Skin Diseases*, p. 214.

† The question alluded to in the communications from Mr. Erasmus Wilson and Sir R. Martin, (*vide* Appendix,) as to the transmission of leprous disease by vaccination and wet-nursing, is one of special interest to Europeans resident in India and other tropical countries, and calls for a searching examination.

‡ "This happy change (the disappearance of leprosy) perhaps may have originated and been continued "from the much smaller quantity of salted meat and fish now eaten in these kingdoms; from the use of linen "next the skin; from the plenty of better bread; and from the profusion of fruits, roots, legumes, and

the frequent destitution of the people in many districts, the general cessation of the malady since the end of the 17th century seems to show that mere poverty of food, provided this be fresh and wholesome, is insufficient to produce or to perpetuate the disease.

In the case of our vast Indian empire with its 150 millions of inhabitants, the question of the food of the people in its probable relations to the wide spread prevalence of leprosy and other endemic disorders, is a matter of the highest interest in an economical as well as in a scientific point of view. That a marked change in the habits of the native population will ensue upon the increase of diverse industries, the improved cultivation of the land, the less frequent recurrence of famines, and the consequent amelioration of their general condition from year to year, and that better food, better clothing, and better housing, with greater personal cleanliness, will lead to the abatement of leprosy, may be confidently anticipated.

As respects the negro and coloured population of the West Indies, the substitution of fresh animal food for the salted semi-putrid fish, now so largely consumed, could not fail, in conjunction with other hygienic measures, to have a most beneficial effect.

An accurate Registration of Births and Deaths, notifying the causes of the latter, and the regular publication of the results from year to year, are indispensable means for ascertaining the hygienic condition of a people, and for discovering the circumstances which mainly affect it. No satisfactory protection of the public health can be maintained without such a system of statistics. The all but universal want of this important information in our West India Colonies, and in the principal cities of India, will account for the general neglect of sanitary precautions amid their communities, and for the large amount of disease and the excessive mortality which usually prevail among them.

Antigua seems to be the only British island in the West Indies which has established and carried out a systematic record of its vital statistics. The annual reports for 1862 and 1863, given in the Appendix, disclose a grave state of things there that calls for public attention. For the seven years from 1857 (when the registration was commenced) to 1863, the deaths have been considerably in excess of the births, and principally during the three last years. The population according to the census in 1861 amounted to 36,412, of which number 2,556 were whites, 6,619 were coloured, and 27,237 were black. "The decrease in the native population since the taking of the census appears to be 1,068, or at the rate of nearly one per cent. per annum."—*Report for* 1863.

The total number of registered births in 1863 was 1,407; of this number 187 were returned as still-births, or at the excessive rate of 13·29 per cent. of the whole.* The birth-rate for the year (exclusive of the still-born) was 3·35 per cent. of the population, or one birth to every 29·84 of the inhabitants.

Considerably more than half the births (59 per cent.) were illegitimate.†

The general death rate in 1863 was 4·27 per cent., or one death to every 23·53 of the whole population. Among the whites it was 3·91; among the coloured it was 4·89; and

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" greens, so common in every family. Three or four centuries ago, before there were any enclosures, sown-
" grasses, field turnips, field carrots, or hay, all the cattle that had grown fat in summer, and were not killed
" for winter use, were turned out soon after Michaelmas to shift as they could through the dead months, so
" that no fresh meat could be had in winter or spring. Hence the marvellous account of the vast stores of
" salted flesh found in the larder of the eldest Spencer in the days of Edward the Second, even so late in the
" spring as the 3rd of May."

* * * * *

" One cause of this distemper might be, no doubt, the quantity of wretched fresh and salt fish consumed by
" the commonalty at all seasons, as well as in Lent, which our poor now would hardly be persuaded to touch."

* * * * *

" The plenty of good wheaten bread that now is found among all ranks of people, instead of that miserable
" sort which used in old days to be made of barley or beans, may contribute not a little to the sweetening
" their blood and correcting their juices."—*White's Natural History of Selborne*, 1778.

* Dr. O'Kearney, the registrar and medical officer of the large district of St. John's, remarks :—

" The condition of the labouring class in this district as regards midwifery attendance is deplorable in the
" extreme; in fact, the question may be well raised whether the poor would not be better left to the
" resources of nature than committed, during the trying period of child-birth, to the care of the uneducated
" and mercenary class who make profession of midwifery skill. In the country districts, and also in the
" city of St. John, the midwives generally belong to a class of persons who from age or infirmity are
" incapacitated from other work, and who with equal rashness and ignorance too often have recourse to
" practices incompatible with safety to mother and child. It would be easy to instance cases of examples of
" bad results of recent occurrence bearing upon the important subject should such be required."

† The increasing prevalence of concubinage appears from the following return :—

Marriages.

1836 - - - - 329		1850 - - - - 168
1840 - - - - 554		1857 - - - - 234
1843 - - - - 484		1863 - - - - 163

among the blacks it was 4·12. In some districts, the deaths were in the proportion of 5·2 per cent., or one to every 19·23 of the inhabitants.

Of the total number, 1,624, of registered deaths, 379 occurred among infants of one year and under.

In 1862 and 1863, the mortality was very much above the average of the preceding five years. "The prevalence of small-pox during the greater part of 1862 and in the "beginning of 1863, and the visitation in the latter year of one of the severest droughts "on record have, with perhaps other causes, produced a degree of distress and destitution "never before witnessed in Antigua."

In the latter part of 1863, 1,298 immigrants were imported into the island, and thus the population at the end of that year was raised by 230 above the census return in 1861. But it is obvious that no amount of immigration can permanently compensate for the loss of life from intrinsic causes among a labouring population.

As the condition of other West India Colonies is believed to be similar to that of Antigua,* the whole subject of their hygienic and sanitary relations manifestly requires the serious consideration of the Imperial Government as well as of the Local Authorities.

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* "The general impression among the best informed is that, for many years past, the population of this "island has not been on the increase, if it has not actually been diminishing, and numerous enquiries which "I made led me to the same conclusion. If such be the case, it is obvious that either an unusually small "number of births takes place, or that there is an excessive mortality. There is every reason to believe that "the latter is the fact. Although the practice of concubinage, which has unhappily of late years universally "prevailed among the negroes, to the general neglect and abandonment of marriage, is always unfavourable "to the increase of the species, it will be found upon enquiry that many of the women are anything but "unprolific. They have a number of children, but few of them live after a year or two. There is certainly "great mortality in early infancy." * * * "I have reason to believe that, in different parts of "the island, the annual death-rate is at least five per cent. of the population, but I found it impossible to "obtain anything like accurate data." * * * "If there be such a waste of human life "continually going on as has been represented in the preceding pages, not to mention the preventible "sacrifice of thousands during the late pestilence, does it not become a question of State policy to consider "what means should be taken to arrest the evil?"—*Report on Jamaica by Dr. Milroy, ant. cit.*, 1853.

THOMAS WATSON, *President.*
GEORGE BUDD.
G. OWEN REES.
ARTHUR FAVRE.
WILLIAM W. GULL.
GAVIN MILROY.
E. HEADLAM GREENHOW.
HENRY A. PITMAN, *Registrar.*

ABSTRACTS

OF

REPLIES TO INTERROGATORIES

PREPARED BY THE

LEPROSY COMMITTEE

OF THE

ROYAL COLLEGE OF PHYSICIANS.

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Interrogatories prepared by the Leprosy Committee of the Royal College of Physicians.

1. Is leprosy known in the colony of ? If so, be pleased briefly to describe it as it occurs there.

a. Are there several different forms or outward manifestations of leprosy? If so, by what names are they respectively known?

b. Are these several forms, in your opinion, only varieties of one common morbid state? or are they specifically distinct diseases, having no affinity with each other?

c. Please to enumerate succinctly the more obvious and distinguishing characters of each form of leprosy which you have seen.

2. At what age does the disease generally manifest itself? and what are usually the earliest symptoms observable?

3. At what period of life, and within what time, does the disease usually attain its full developement? and at what period of life, and after what time, does it usually prove fatal?

4. Is the disease more frequent in one sex than in the other? if so, in what proportion?

5. Is it more frequent among certain races? among the white, the coloured, or the black population? and in what relative proportions?

6. In what condition of society is the disease of most frequent occurrence, and what are the circumstances which seem to favour its developement in individuals, or in groups of individuals?

Please to enumerate these circumstances under the following heads:

a. The characters of the place or district where the disease most frequently occurs in respect of its being urban or rural, on the seacoast or inland, low, damp, and malarial, or hilly and dry.

b. The sanitary condition of the dwellings, and of their immediate neighbourhood.

c. The habits of life, as to personal cleanliness or otherwise.

d. The ordinary diet and general way of living.

e. The occupation or employment.

7. What conditions or circumstances of life seem to accelerate or aggravate the disease when it has once manifested itself in an individual?

8. Does the disease appear often to be hereditary?

Have you known instances where one member only of a family has been affected while all the other members remained free from any trace of it?

9. Have you reason to believe that leprosy is in any way dependent on, or connected with syphilis, yaws, or any other disease?

10. Have you met with instances of the disease appearing to be contagious, in the ordinary sense of that term, i. e., communicated to healthy persons by direct contact with, or close proximity to, diseased persons?

a. If so, in what stage was the malady in the diseased person? Were there ulcerations with a discharge?

b. Please to describe briefly the case or cases of contagious communication which you have seen yourself.

c. Does the disease seem to be transmissible by sexual intercourse?

11. Are persons affected with leprosy permitted in the colony of New Brunswick to communicate freely with the rest of the community? or is there any restriction imposed, or segregation enforced, in respect of them?

12. What public provision is made for the reception and treatment of the leprous poor?

Are they admitted into the general hospitals? or are there separate infirmaries or asylums provided for them?

Please to describe the structural and sanitary condition of such buildings, and the arrangements made for the medical and hygienic treatment of the sick in them.

13. Can you state the number of leprous persons maintained at the public expense in the colony of ?

14. Have you reason, from personal knowledge, to believe that the disease has been of late years,—say during the last 15 or 20 years,—on the increase in the colony of or otherwise ?

And if so, please to state what in your opinion may have contributed to its increase or its diminution.

15. What results have you observed from the hygienic, the dietetic, or the medicinal treatment of the disease? Does leprosy ever undergo a spontaneous cure? and if so, at what stage of the disease?

Are you aware what proportion of the leprous poor treated at the public expense in the colony of recover wholly or partially?

16. What is the estimated population of the colony of ? and when was the last Census taken?

Is there a general and uniform registration of births and deaths, including the causes of death? and if so, how long has such a registration existed?

17. Can you state the name of the townships or districts in which leprosy prevails most, and give the number of lepers and the population in each of such townships or districts?

Please to add any other observations which you believe may serve to throw light upon the predisponent or exciting causes of the disease, or which may bear on its prevention, mitigation, or cure.

Any documents, printed or not, descriptive of the disease, as it has been observed at any time in the colony of with any reports of post-mortem examinations, or any pictorial illustrations, will be acceptable; also copies of the Annual Registration Returns, and of other works bearing on the vital statistics of the colony.

Abstract of the Replies to the Interrogatories prepared by the Leprosy Committee of the Royal College of Physicians.

No. 1.

NEW BRUNSWICK.

1. Leprosy has existed in this province for many years, and has arrested the attention of the Colonial Government upwards of 20 years past. Its first appearance was in Tracadie, a district in the county of Gloucester, bordering the bay of Chaleurs in the gulph of the St. Lawrence; it was brought into the province by a French emigrant family originally from St. Malo in Normandy.

a. I have not seen, and I think I can correctly assert, that there are not any other forms of leprosy in this province. Greek elephantiasis exists in various degrees of severity, and retains its pathognomonic symptoms in all of them.* *Dr. Bayard.*

Greek elephantiasis or tubercular leprosy is the only form known in New Brunswick. It usually appears first with reddish, yellowish, or tawney spots on the skin; and as the disease progresses the face and greater part of the body are beset with tubercles, varying in size from a pea to an olive; these soften, ulcerate, and emit a sanious discharge, and afterwards cicatrise. A kind of dry gangrene attacks the fingers and toes, which drop off at the phalanges, and thus the disease progressively advances to a fatal termination, which is usually preceded by diarrhœa. This is the only form of the disease I have seen. *Dr. Gordon.*

Leprosy has been known in New Brunswick since 1815. How or by what means it was introduced into the country is unknown. There are two forms of this disease here; the tubercular, and the anæsthetic or non-tubercular. I hold them to be varieties of one common state. The tubercular form is characterised by the appearance of yellowish or dark red spots or patches on the skin, usually at first on the head, chest, arms, and legs, and from half an inch to four inches in diameter. Tubercles of different sizes form on various parts of the body, chiefly on the face, eyebrows, nose, or ears. Some of them subside, leaving a whitish cicatrix, much thinner than the surrounding yellowish or dark red skin; others ulcerate, and give rise to ill-conditioned sores. The ears become much thickened with elongation of the helix. The hair falls off from the eyebrows, and afterwards from other parts of the body. The mucous membrane of the mouth, fauces, &c., becomes ulcerated and tuberculous, causing great difficulty of breathing, with excessive fœtor of the breath. There is more or less insensibility of the skin of the affected parts; but this symptom is not so marked as in the next form of the disease, the anæsthetic, in which discoloured spots appear as in the first form, but, in place of tubercles, bullæ or vesicles form, which burst, ulcerate, and heal up, to be followed by fresh crops, which then follow a similar course, perhaps for years. The phalanges of the fingers and toes drop off, followed by great distortion. The anæsthesia is sometimes so great that I have known one of the patients in the hospital burn her hand and arm severely at the stove, without being aware of the injury till told of it by one of the inmates. The insensibility affects the mucous surface of the mouth, fauces, &c. The sense of smell is lost.

(*Dr. Nicholson.*) Resident physician to the Tracadie Lazaretto.

The Greek leprosy is prevalent in the French settlements of Nequac, Tracadie, and Carraquet, situated on the north side of the Miramichi River, and extending up and down the river about 20 miles. It is altogether confined to the French population. There is no other form of leprosy known in the province, that I am aware of.

The disease here generally begins with the appearance of a very fine red rash, mostly in the limbs, which exudes a watery fluid. This very soon disappears, and is followed by a feeling of drowsiness, disinclination for work, and great depression of spirits. At a period of from one to three months, tawny-coloured patches appear (most commonly on the forehead, chest, and extremities), interspersed with white patches. The white patches are perfectly devoid of feeling, and can be burnt or torn without giving the patient the slightest uneasiness. The nails of the fingers and toes assume a white colour, becoming scaley and brittle, gradually break off, and are never replaced. A year or two after the discoloration appears, tubercles form on the face, nose, and hands; sometimes also over the body. These ulcerate

* Dr. Bayard refers to a paper by him in the "Lancet" for January 1850, wherein he has related several cases of the disease.

at different periods, and are covered with a thick blackish crust, very similar to the syphilitic scab. The bones of the nose become carious and exfoliate. The conjunctiva is frequently covered with tubercles, which, ulcerating, penetrate the sclerotic coat, and the eye is evacuated. The fingers and toes then begin to suffer; the toes especially. Sores surround the joints, and, ulcerating deeper and deeper, sever the extremity of the toes and fingers, and joint after joint follow. In the latter stages the bowels are much deranged. The lungs also suffer much, with great difficulty of breathing. The breath is of a peculiarly fœtid smell, evidently resulting from ulcerating tubercles. *Dr. Benson.*

2. From the 7th to the 51st year of age. *Dr. Bayard.*

Most frequently about puberty; but it may occur at any age, from childhood to 50.

The discoloured spots are the first symptoms observable. *Dr. Gordon.*

I believe all ages are liable. The youngest patient I have seen when admitted into the hospital was 9 years; the oldest was 63.

The earliest symptoms are the yellowish spots on the forearms, legs, and face. They are occasionally preceded by a marked alteration of the general health for several years, depression of spirits, lassitude, languor, dullness, and a decided febrile state.

Dr. Nicholson.

At no particular age; earlier probably in those whose intermarrying with diseased families has been most frequent, judging from the cases in the hospital. Thus James M'Graw (a frightful object) is uncle to Stanislaus and John M'Graw. The two latter brothers are of the ages of 13 and 15. Stanislaus was 9 years old when first discovered to be leprous, and his brother was nearly of the same age when attacked. Whereas other patients were 60 years old when first attacked.

The adults generally find the first symptoms come on after exposure to wet and cold.

I have not heard of any very young subjects dying of leprosy.

The duration of life in leprosy seems to depend much on the diet and habits of comfort and cleanliness. *Dr. Benson.*

3. The disease usually attains its full development in 7 years from its commencement. The average duration of life under it is about 14 years. *Dr. Gordon.*

It rarely appears before puberty. From the first invasion of the disease to its full development seems to be from 3 to 7 years; often much longer. The period of life and the time when it proves fatal vary much. *Dr. Nicholson.*

4. I have seen 22 cases, of which 15 were in males and 7 in females. The ages of the patients varied from 11 to 41 years of age. *Dr. Bayard.*

Most frequent in the male sex; but I cannot say in what proportion. *Dr. Gordon.*

It appears to attack males in a much larger proportion than females. There are at present in the hospital 14 males and 8 females. *Dr. Nicholson.*

5. All the cases I have seen were among the French population in Tracadie.

Dr. Bayard.

It is chiefly confined to the French population. *Dr. Gordon.*

It has here been confined to the French population, with the exception of four persons who are said to have died of the disease many years ago. *Dr. Nicholson.*

There are no blacks in the infected districts. *Dr. Bunsen.*

6. The disease has occurred almost exclusively in Tracadie, a rural district. Isolated cases have been found in Niquac, Tabicsintac, Pokemouche, Carrannquet, Bigaud, Little Tracadie, and at Rivière du Cache; surrounding districts, with a scattered population. The general features of the country are similar in all. The land is undulating, and intersected with fresh-water rivers, abounding with salmon and trout, and flowing into the inlets of the Bay of Chaleurs and the Straits of Northumberland, which furnish abundance of cod, herrings, and eels. The country cannot be considered malarial.

The dwellings consist generally of one room, heated in winter to very high temperature with close stoves. Their condition adverse to health. A few cleanly; many the reverse.

The ordinary diet is fish, which is frequently offensive from decomposition. Eel soup, thickened with barley, is a favourite dish.

Occupation—Fishermen during the catch; agriculture is shamefully neglected; lumbering their winter employment. Habits indolent. A fine agricultural country neglected.

Dr. Bayard.

Among the poorer classes of farmers and fishermen, inhabiting low damp situations, and whose principal diet is imperfectly cured fish and pork.

Their dwellings are warmed by close stoves, are kept at a high temperature, and badly ventilated, and unclean. *Dr. Gordon.*

The districts where the disease exists are along the shores of the Gulf of St. Lawrence

and Bay de Chaleurs. The country is flat, though not damp or malarial. The climate is considered salubrious. The extremes and mean of temperature are said to be,—

Extreme cold - - - -	24° F. below zero.
Extreme heat in shade - - -	96°
Mean temperature - - -	44°

The disease is entirely confined to the poor, who live in rude log huts, hardly sufficient to protect themselves from the inclemency of the weather. Usually there is but one room, which is occupied by pigs, poultry, &c., as well as by the family. They are poorly clad, and all around them betokens the most abject poverty. Their habits are indolent, improvident, and extremely unclean. In the winter months their diet consists solely of salt herrings, salt and dried codfish, and potatoes, at times salt pork; in summer they live on fresh fish; they have very little bread. They are chiefly employed in fishing, farming, and lumbering. *Dr. Nicholson.*

7. Neglect of personal cleanliness; the impure air of crowded and unventilated rooms; long exposure to extremes of heat and cold; accidents causing structural injuries; parturition, in some instances; the action of other concurrent diseases occasionally, and mental depression, have accelerated and aggravated the disease; and in some cases these causes have induced the development of an hereditary predisposition; and I may add excessive venery.

The cases (narrated in my paper in the "Lancet" for January 1850) confirm the action of such causes, with the exception of the effects of erysipelas in one case, and some other lepers who were simultaneously attacked with it, and in whom the disease was mitigated by it.

Many of the lepers in the lazaretto thought their disease was aggravated by their imprisonment in the lazaretto on Sheldrake Island. Mental influence with such has probably accelerated tubercular ulceration. *Dr. Bayard.*

Poor diet, want of cleanliness, scanty clothing, and exposure. *Dr. Gordon.*

Suppression of the secretions of the skin from exposure to wet and cold, the use of improper food, inordinate muscular exercise, are circumstances which tend greatly to aggravate the disease after it has once manifested itself. *Dr. Nicholson.*

8. It is certainly hereditary.

The cases I have reported establish the fact that the disease may attack one or two members of a family, while the others remain exempt. Leprous parents suffering for many years under ulcerated tubercles, with destruction of the fingers and toes, have had families in whom the disease had not appeared when I saw them. *Dr. Bayard.*

It does appear to be propagated by hereditary transmission, yet not entirely so; as individuals of different races, living in the same house with the lepers, have become infected and died of the disease.

I have known instances where some members of a family have had the disease and the others have remained free from it. *Dr. Gordon.*

It seems to affect certain families, and only those, and has done so, with few exceptions, since it was first observed here. It can be traced back as far as the grandfather. From these facts, as well as that all now in the lazaret are connexions, most are blood relations, no doubt remains on my mind that it is hereditary.

I have known numerous instances where one member of a family has been affected, while all the others remained quite free from any trace of it. *Dr. Nicholson.*

The disease appears to be altogether hereditary, as it has not extended beyond the French people, except in one case; a Scotchman named Stewart, living 70 miles from Tracadie, had the disease, and his descendants are likewise affected. No cause can be assigned how he got it.

In several cases now in the hospital many of each of their families are apparently well and hearty at their own homes. *Dr. Benson.*

9. I have not any reason to believe or suspect that it is in any way dependent on syphilis. I was at one time disposed to suspect the complication of syphilis with leprosy in some cases, but a thorough inspection of the sores and minute examination removed my suspicions. * * * It would be difficult to reconcile the birth of healthy children, when born, and remaining healthy for months and years, with the phenomena of hereditary syphilis. *Dr. Bayard.*

It is entirely distinct from and unconnected with syphilis, yaws, or any other disease. *Dr. Gordon.*

I believe leprosy is a disease by itself. Syphilis and yaws are unknown in the districts where the disease prevails. *Dr. Nicholson.*

There is no reason to believe that it is in any way connected with syphilis. *Dr. Benson.*

10. I am thoroughly convinced that the disease in Tracadie is not contagious, and that it is not transmissible by sexual intercourse. All the cases I have reported prove its non-contagiousness. Leprous husbands have lived many years with their wives, and vice versâ, without infecting each other. Children have been born of leprous mothers, and have been nursed and handled in infancy by the patients in the lazaretto in all stages of the disease, without manifesting any symptoms of the disease. *Dr. Bayard.*

The answer to interrogatory 8 applies to this and to *a* and *b*.

It does not seem to be transmissible by sexual intercourse. *Dr. Gordon.*

I have never met with an instance of leprosy being communicated to a healthy person by contagion. On the contrary, we have a female who for the last six years has scrubbed the floors of the hospital, washed their clothes, ate, drank, and slept with those affected, and who notwithstanding exhibits no trace of the malady, and at present enjoys good health. Leprous husbands have for years slept with their wives and families, and wives with their husbands, without contracting it. Children have been born of leprous mothers in the last stage of the disease, and have been nursed by lepers, and have now attained adult ages without manifesting any symptoms of the disease. All of which proves it not to be transmissible by sexual intercourse. *Dr. Nicholson.*

Several lepers have cohabited with their wives for years, and no infection was communicated to them. In the case of a leprous man now in the hospital, the wife has continued free, although two of seven children which she has borne to him are affected with the disease; the other five are clean. *Dr. Benson.*

11. Twenty years have elapsed since the Tracadie disease attracted the notice of the provincial government, when the Governor, Sir Wm. Colebrooke, commissioned four medical men to investigate and report upon it. They declared it to be Greek elephantiasis, and to be contagious. Thereupon an act was passed empowering the erection of a lazaretto, and the appointment of commissioners to separate the lepers from society, and confine them within the limits of the establishment. This measure excited the dread and horror of the poor victims, and the cases I have related will convey some idea of its failure or success. Several fled to the forest and secreted themselves to avoid what was considered imprisonment for life; and one, if not more, of the sufferers are believed to have perished in this way. Prior to the establishment of the lazaretto, leprous persons communicated freely with the rest of the community. *Dr. Bayard.*

They are not permitted to communicate freely with the rest of the community; but as soon as the disease has made its appearance, they are confined to the lazaretto.

Dr. Gordon.

Whenever a person is supposed to have the disease, a summons is issued by one or more members of the board of health to have the suspected individual brought before the medical officer for examination, and should it be found that he or she has got the malady, he is at once admitted into the hospital. Many, however, are but too glad to avail themselves of the opportunity of obtaining medical aid, as well as to avoid being an object of horror to those around them, and present themselves at the hospital of their own accord for admittance. *Dr. Nicholson.*

12. The lazaretto, a wooden building, is upon Sheldrake Island in the Miramichi River. The building and establishment admitted of improvements when I saw it in 1847.

Dr. Bayard.

The leprous poor are fed and clothed in the lazaretto, and a medical man attends upon them. *Dr. Gordon.*

The hospital is a wooden building, measuring 60 by 30 feet, comprising four wards, well ventilated, and furnished also with baths and other requisites conducive to recovery. The inmates are daily attended by a resident physician. The building is well adapted for a hospital; it is surrounded by a picket fence 12 feet high. This was deemed necessary at one time, to prevent the escape of the lepers during the night. Outside this fence is the keeper's house, in which their food is prepared; likewise a small prison for the confinement of the refractory. The whole is surrounded by a common fence inclosing an area of six acres, within which inclosure the patients may go about for exercise and amusement.

Dr. Nicholson.

The hospital is supported by a grant from the government of the province. A medical man is specially appointed in them, and they are fed and clothed at the expense of the province. Their food consists of the best animal food that can be procured, potatoes and flour of the best description, and every care is paid to their cleanliness and comfort.

Dr. Benson.

13. At one time there were 37 lepers in the lazaret. The number is, I understand, now reduced by death to 20. *Dr. Gordon.*

The number of leprous persons at present maintained at the public expense is 22. The following is a list. *Dr. Nicholson.*

No.	Names of Males.	Age.	When admitted.	Residence.	Length of Time supposed to have had Disease before being admitted into Hospital.
1	Oliver Gautrieau	37	June 1848	County Gloucester, Tracadie.	3 years.
2	James M'Graw	27	Dec. 13, 1857	Do.	1½ years.
3	Charles Muzerall	26	Aug. 13, 1857	Niquac, Northumberland.	2 years.
4	Bellany Savoy	15	Aug. 23, 1857	Tracadie	—
5	John Batise Bredau	63	July 25, 1860	Do.	2 years.
6	Philos Bredeau	29	July 27, 1860	Do.	3 years.
7	Victor Basque	28	Nov. 4, 1860	Do.	2 years.
8	John M'Graw	13	Mar. 30, 1861	Pokemouche	1 year.
9	Stanislaus M'Graw	11	Mar. 30, 1861	Do.	1 year.
10	Jacque Richard	28	June 5, 1862	Tracadie	4 years.
11	Christopher Drysdall	11	June 8, 1862	Do.	2 years.
12	Frederick Savoy	26	June 11, 1862	Do.	3 years.
13	Roma Goold	13	June 24, 1862	Do.	5 years.
14	Eli Brudeau	51	Sept. 15, 1862	Do.	1 year.

No.	Names of Females.	Age.	When admitted.	Residence.	Length of Time supposed to have had Disease before being admitted into Hospital.
15	Judick Arsineau	28	July 13, 1859	Tracadie	3½ years.
*16	Ann Benoit	35	Dec. 13, 1869	Do.	4 years.
17	Mary Savoy	13	Nov. 5, 1860	Do.	3 years.
18	Vaneraunt Arsineau	60	Feb. 18, 1861	Do.	5 years.
19	Catherine Brudeau	18	June 2, 1862	Do.	2 years.
20	Jane Brudeau	25	June 5, 1862	Do.	2 years.
†21	Mary Thibideau	12	July 3, 1862	Do.	3 years.
†22	Mary Commeau	18	July 24, 1862	Do.	—

* Ann Benoit's grandfather died of the disease in the hospital. Father and mother living, perfectly healthy and free from disease.

† Mary Thibideau and Mary Commeau. Their grandfathers died of the disease in the hospital. Their fathers and mothers are still living, perfectly healthy and free from disease.

14. I believe that during the last 10 or 12 years the disease has been on the decrease, owing to the better care and attention taken to remove the lepers into the lazaret. The maximum number of lepers in the lazaretto at one time was 37. *Dr. Gordon.*

There does not appear to be any increase or diminution of the disease in this country. When attention was first directed in 1844 to the disease, 12 cases were counted in the county of Gloucester, and it was supposed that there were 10 or 12 additional cases in the county of Northumberland. In 1848 the lazaret contained 22 cases; in 1850, the number was 31. *Dr. Nicholson.*

15. I am not aware that it has ever undergone a spontaneous cure. The results of medical treatment have been very unsatisfactory. *Dr. Gordon.*

The general health of the patients now in the lazaret is greatly improved, from daily out-door exercise, the use of caustic and sulphuretted baths, and a nutritious and unstimulating diet. The plan of treatment I have adopted is that laid down by Drs. Danielson and Boeck.

There never has been an instance here of a spontaneous cure, nor have there been any of complete recovery. Some cases have partially recovered, but the disease has always returned in a more serious form. *Dr. Nicholson.*

I cannot say that any medical treatment is reported to have any influence on the disease. Cleanliness, animal food, and warm baths appear to have been the only means of prolonging the lives of the lepers. There has been no recorded case of cure, spontaneous, or by treatment. *Dr. Benson.*

16. By the last Census, taken 1861, the population was about 250,000.

There has not been any such registration, although this important requirement has been frequently urged by medical men on the attention of the legislature. *Dr. Bayard.*

There is no registration of births and deaths that I know of. *Dr. Gordon.*

The estimated population of New Brunswick is, according to Census of 1862, 252,047.

There is no such registration. *Dr. Nicholson.*

Dr. Chipman of Nassau, Bahamas, in his reply to interrogatory 16, says, "There are in "New Brunswick and Canada many persons who are the offspring of inhabitants of the "French colonies of Martinique and Guadaloupe, who in times gone by emigrated to Canada, "and spread thence to the adjacent provinces." Dr. Chipman conjectures that the disease now existing in certain districts of New Brunswick may have been imported by the immigrants from the French West India colonies.

17. Dr. Bayard refers to his essay and cases in the Lancet for particulars. It is a transcript of his report to the colonial government of his official visit of examination of the lepers in and out of the lazaretto, along with Dr. Wilson, a member of the legislature, printed in the journal of the House of Assembly for 1848. *Dr. Bayard.*

The districts where the leprosy exists, viz., Tracadie, Pokemoche, and Niquac, comprehend a circle of 25 miles in diameter. The population is 3,978. *Dr. Gordon.*

Leprosy in the province of New Brunswick is only known in three parishes in the county of Gloucester and in one in the county of Northumberland. *Dr. Nicholson.*

Dr. Benson, who was sent in October 1862 by the Lieutenant-Governor to inspect the leper hospital, states in a letter addressed to his Excellency, "From what I can gather from the "old inhabitants of Tracadie, the disease was first noticed about 40 years since, in the case "of one, —— Benoit, daughter of Marie Bredeau; and although no mention is made of the "disease existing previously in the family, it might easily have been so, as the Bredeaus "came from St. Malo in Normandy when young, and might either have been unacquainted "with the fact, had it been so, or unwilling to admit it when discovered. Be that as it may, "it has pursued her descendants with frightful pertinacity, and there is no case now in the "hospital who does not claim some relationship to that unfortunate stock." . . . "If it "is allowed that the disease is hereditary, no material benefit can arise to the province from "the foundation of a lazaret, with the expectation of arresting the malady, as your Excel-"lency will perceive that, in several cases, the patient leaves a family of several children at "home to propagate the disease after his death, and that hundreds of relatives are likely to "be inheritors of the family curse. That it is a most useful institution, when used as an "asylum for the unfortunates, is fully borne out by the manifest improvement in their general "appearance, and by the diminished rate of mortality among them since Dr. Nicholson has "been stationed at Tracadie."

"The hospital was first established at Sheldrake Island in July 1844, and continued there "till July 1849. During this period there were admitted 32 patients, of whom 14 died; "3 escaped from the island, and 15 were transferred to the new hospital at Tracadie, opened "in July 1849. From that period down to October 1st, 1863, 82 patients, including the "above 15, have been received. Of these, 58 have died, 3 were discharged as not diseased, "and 21 remain in the hospital. Unfortunately there is no record of any patient being "discharged cured."

For the dispatch of the Lieutenant Governor of New Brunswick to the Duke of Newcastle of 13th April 1863, vide Appendix, p. i.

No. 2.

BERMUDA.

1. Leprosy, though not common, is seen under two forms, viz., 1, elephantiasis or Barbadoes leg, or the rose, and, 2, lepra tuberculosa or Greek leprosy. They are, I consider, specifically distinct diseases; the so-called Barbadoes leg being only a chronic form of erysipelas, modified by climate, while the leprosy is a truly tuberculous disease. The true leprosy commences with a thickening of the skin, which becomes tuberculated and ulcerated, and is accompanied with a cachectic state of the system, The first appearances, in a case which I watched from its commencement to its fatal termination, were these:—Erythematous patches of a bright red colour on the forehead, nose, and ears, giving the person the appearance of being overheated by exercise, and subsequently on the hands, feet, and scrotum. These patches continued thickening until they became distinctly tuberculous, while at the same time the sensibility in them, and more especially in the hands and feet, became so acute that the least touch occasioned intense pain. The tubercles went on increasing in numbers and thickness until they became general over the whole of the body,

and so distorted the features as to render them scarcely recognisable. On the extremities they vesicated, and bursting, discharged a dark bloody ichor; they slowly and imperfectly healed, leaving an ugly dark scar. At the same time the hair fell off, leaving the head bald, the senses of smelling and hearing became imperfect, the eyes grew dim, and the voice hoarse. The disease extending to the lungs, the patient died of pneumonia. Previously, however, the sensibility, which had been at first acute in the extremities, became completely lost, so that mice and other vermin would nibble and eat away portions of the flesh without the patient being aware of it. The whole duration of the disease was 28 months.

Many persons in Bermuda are subject to an erysipelatous swelling of the leg which, after it has existed for some time, becomes a hard thickening of the skin and subjacent cellular and adipose tissues like the "Barbadoes leg," and is in fact a milder form of that disease, though popularly it is called the "rose," the name of "Barbadoes leg" being applied when it exists in persons who have contracted the disease in countries further south. The "rose" is principally, although not altogether, confined to middle-aged females of sedentary habits, who have been or are suffering from gastric derangements. It is sometimes the result of an acute attack of erysipelas, but usually it is more insidious in its approaches, commencing with an œdematous swelling of the ankle which spreads up the leg. After it has existed for a time, it is only inconvenient from the deformity it occasions; but it is not dangerous, painful, or injurious to the general health; and it occurs principally in elderly females, because they form the sedentary portion of the inhabitants.

2. I have seen or heard of seven cases of true leprosy, all of which occurred in adults; and the first symptoms seem to be the erythematous patches, often mistaken for syphilis, occurring principally and at first about the face.

The "Barbadoes leg," including the so-called "rose," occurs in both early and adult life, but rarely in the former.

3. The seven cases mentioned above occurred in adult life, and three of them that have terminated ran their course in from two to four years.

4. Of the seven cases, five were in males and two in females.

5. Of the seven cases, five were in whites and two in blacks.

6. I cannot say.

7. I am not prepared to say.

8. True leprosy is in many cases hereditary. Of the seven cases, two were in persons who were first cousins; another was a distant relative of these. The disease is regarded to be hereditary in the family. I may also mention that distant connexions are very liable to scrofula.

9. I cannot say. Yaws is unknown in Bermuda.

10. I have not seen a case where the disease appeared to be contagious, nor is it regarded so here. That it cannot be transmitted by sexual intercourse I am inclined to believe, because in one of the cases that came under my observation during the course of the disease the patient became father of a child, which is now about 11 years old, but neither it or the mother have manifested any symptoms of the disease.

11. No restrictions.

12. None.

13. None.

14. I cannot say.

15. I am not prepared to say.

16. At the last Census in 1861 the population was 11,450. The whites were 4,624 and the blacks 6,826. There is no general registration of births and deaths. *Dr. Hinson.*

No. 3.

BAHAMAS.

1. It is known in the Bahamas, in common with all the islands in this archipelago, and is generally known by the name of "leprosy," "cocobey," and "black scurvy."

a. There are several forms of it. The first and chief feature in the most common is characterized by small tubercles, generally of a copper colour in the mulatto and light

coloured descendants of the African races, and of a darker hue in the pure African, appearing on the face, forehead, and extremities. The lobes of the ears and alæ nasi are generally first affected; afterwards ulcerations of an obstinate character are formed chiefly on the extremities.

b. The other form is chiefly known by the digital phalanges of the fingers and toes becoming ulcerated and dropping off, the different phalanges yielding one after another till often the only part left is perhaps a thumb or one finger of the hand.

Dr. Chipman, Physician of the N. P. Asylum, Nassau.

Reference made to a paper on leprosy of the West Indies in the "Medical Times and Gazette" for October or November 1859. *Dr. Sweeting.*

2. The age is very variable. There have been leprous patients at the lazaretto of the N. P. Asylum of about 9 or 10 years, and, generally speaking, the disease has been well marked when first seen by the physician.

By far the majority of leprous persons reside in the out-islands of this government, particularly at Acklin's Island, where I am told whole families are afflicted.

The age at which it first appears may be considered to be from 8 to 20 years.

Dr. Chipman.

At all ages It commences with a general constitutional cachexy, and advances so insidiously that it is common for people to say, "I believe so and so is becoming leprous.

Dr. Sweeting

3. I have often seen it developed fully before puberty, and not unfrequently the patients have died of the disease before the age of twenty. It however proves fatal at various periods; some die early and some not till late in life. *Dr. Chipman.*

It attains its development about the 30th year. *Dr. Sweeting.*

4. Rather more frequent in males than in females, in the proportion of about five to four. *Dr Chipman.*

More frequent in males. *Dr. Sweeting.*

5. The disease is very common, and almost in equal proportion among the black and the coloured classes. It is certainly very rare among the whites of this particular colony. In Antigua I remember only one family affected with it; a gentleman of good property, who died in 1829 or 1830. *Dr. Chipman.*

More frequent among the coloured population. *Dr. Sweeitng.*

6. I have not been able to trace it to any particular condition of society, either physical or moral. The dwellings of the people are usually low, close, and ill ventilated. Their diet ordinarily is fish, vegetables, fruits, with more pork flesh than any other. *Dr Chipman.*

a. Low, damp, malarial, and sea-coast.

d. Principally on fish and wheaten flour or potatoes, with but little change,—which I think one of the causes of the disease. *Dr. Sweeting.*

7. I have a strong opinion that the poor diet generally of the lower classes, and the frequent use of fish and pork, increase the tendency to its development in the hereditarily predisposed. *Dr. Chipman.*

Low diet and want of change in diet. *Dr. Sweeting.*

8. I believe it to be exclusively so. I have now a family under my care in the asylum, where the father is affected with one form and the mother with the other form of the disease. Two of the children are already affected; the other three, of the respective ages of 20, 16, and 11, are still exempt. *Dr. Chipman.*

Disease is often hereditary.

Yes. *Dr. Sweeting.*

9. I have not traced any connexion between leprosy and syphilis, yaws, or any other contagious diseases. *Dr. Chipman.*

None whatever. *Dr. Sweeting.*

10. During more than 35 years experience in the West Indies, I have never been able to trace the disease to contagion or infection. In several instances I have known the wife of a leprous person remain exempt. *Dr. Chipman.*

None.

c. No. *Dr. Sweeting.*

11. There is no positive law to prevent lepers from mixing with other persons, although the colony has striven to prevent it by establishing a lazaretto in conjunction with the asylum. The accommodation provided is for only 15 or 20, while there are doubtless a hundred leprous patients in the colony, especially in the out-islands. *Dr. Chipman.*

In Nassau there is a prejudice against intercourse, but there are no restrictions.
Dr. Sweeting.

12. The lepers are admitted into a building in the immediate vicinity of the N. P. Asylum; it is set apart for the exclusive use of this class of patients. There are several wards or rooms in it; each is calculated for two patients; but in the case of a family, four often occupy a room. The building is of stone with a shingle roof. *Dr. Chipman.*

13. The number in the lazaret is generally from 8 to 12. In the absence of a compulsory law, it would be very difficult to induce the friends of leprous patients (in the out-islands) to send them into a lazaret, where they would be subject to discipline and restraint.
Dr. Chipman.

14. From all I can learn, the disease is on the increase in several of the out-islands, particularly "Acklin's," and the islands adjacent to it, viz., Crooked Island and Fortune Island. About 70 years ago, several slave families were removed from Grenada and St. Vincent to this colony; the descendants of these immigrants have extensively propagated the disease. *Dr. Chipman.*

The general opinion is that it is increasing. *Dr. Sweeting.*

15. I have never witnessed any marked benefit from any mode of treatment; nor have I ever seen a case of recovery. *Dr. Chipman.*

No result from treatment. *Dr. Sweeting.*

16. By the Census in 1861 the population of the Bahamas, exclusive of the Turks and Caicos Islands, was about 35,000. There has been a general registration of births and deaths for about ten years. *Dr. Chipman.*

17. In consequence of the prejudice against contact with the disease, post-mortem examinations have not been practised to any extent. It is my intention, however, on suitable occasions, to have recourse to them. *Dr. Chipman.*

The causes which would bring on scrofula in England would in my opinion bring on leprosy in the West Indies. *Dr. Sweeting.*

No. 4.

JAMAICA.

1. It is well known. (Dr. Fiddes refers for a description to his paper in the Edinburgh Medical Journal for June 1857.)

a. There are two distinct forms or varieties of this disease, viz., the tubercular and the anæsthetic.

b. The two forms are probably not specifically distinct diseases. The one has a strong pathological affinity with the other; their difference mainly depending on the localization of the materies morbi.

c. In the tubercular disease the morbid action falls primarily and chiefly on the cutaneous tissue and the gastro-pulmonary mucous membrane, while the cerebro-spinal system is not much implicated, and scarcely shows disorder till an advanced stage of the complaint. In the anæsthetic it is principally manifested on certain portions of the spinal nerves; on those of the upper and lower extremities primarily, and secondarily on the spinal cord itself, and on the cerebral nerves which supply the face, giving rise to anæsthesia and atrophy of the extremities, destruction of the joints, partial paralysis of the limbs, palsy of the facial muscles, with perverted nutrition of all the parts dependent on the cerebro-spinal system for nervous influence. *Dr. Fiddes.*

There are two forms of the disease here, viz., the tubercular, properly called "leprosy," and the anæsthetic, known as "joint-evil," or "coco-bay." This latter form is here generally considered to have been imported from Africa.

b. From my observations, I regard them as varieties of the same morbid condition, the difference between them appearing to depend on the portion of the nervous system primarily or chiefly affected.

In some cases the symptoms of the two forms appear to co-exist, or become more or less blended together. In no case, however, I have seen, have members of the same family been attacked the one by tubercular and another by anæsthetic elephantiasis. Whenever more than one member of a family has suffered, it has been from the same form of the disease.

For several months—from 2 to 12 or 18—before the appearance of any spots or patches on the surface in the tubercular form, there is very generally more or less distinctly marked

malaise experienced,—"an indefinite feeling of something wrong,"—"chills like ague,"—"rheumatic pains about the extremities,"—"creeping pricking sensations of the limbs,"—"stiffness and numbness of parts,"—"a falling asleep of a limb, a hand or a foot, finger or toe." This state, or these sensations, are generally referred back to some sudden exposure to alternations of temperature, to sudden chills when heated, to coming out of doors after a vapour bath, to exposure during a chilly night in the streets while assisting to put out a fire, &c., &c.

The spots, at first mere stains, become raised, often presenting a smooth, swollen, and polished aspect, and acquire a darker hue. Afterwards they lose the polished look, and become rough and tuberculated. The patches and tubercles ultimately ulcerate, forming oval sores of a whitish sluggish look, exuding a glairy discharge. I have seen the whole surface of the body covered with these ulcers, so that there was scarcely an inch of healthy skin. When any of the ulcers heal, they leave white shrivelled cicatrices. There is no particular part of the body on which the disease first appears. As it advances, the eyebrows, nose, cheeks, lips, chin, ears, the hands and fingers, toes, the fauces and trachæa are chiefly affected, causing frightful disfigurement, &c., with the hoarse nasal voice so characteristic of tubercular leprosy. Necrosis of the nasal and palate bones occurs at a late stage.

From the very first appearance of the spots on the skin, the sensibility of the affected parts is found to be diminished, and this symptom becomes more marked with the advance of the disease. I have often excised large tubercles from the face and hands, which, though they bled freely, did not cause the least pain to the patient. Lepers often inflict upon themselves severe burns in cooking their food, &c., without being aware of it.

In anæsthetic leprosy there is also a premonitory stage, indicated by pains shooting along the limbs in the course of the larger nerves, and affecting the use of certain fingers and toes, or of a hand and a foot; not mere numbness, but positive loss of power, along with loss of sensation. The muscles of the affected limb become atrophied, and the whole limb diminishes in size. The fingers and toes become contracted, and flexed on the palms and soles, and gradually become permanently fixed in this position. When stains or discoloured spots appear on the surface, they are usually much larger than in the tubercular form, and are often of a gyrate shape, extending over a whole limb, or a great portion of the trunk. Often the ulnar or the musculo-spiral nerve may be felt in its superficial course to be much larger than natural. The ulceration and subsequent destruction of the fingers and toes are usually preceded by the formation of large vesicles or bullæ which burst, discharge a glairy fluid, and become covered with a crust or scab on the affected part. At this stage the disease may be arrested for years, the patient enjoying very good health, and merely crippled by the loss of his fingers and toes; or a general wasting of the whole body may occur, with paralysis, more or less complete, of the nerves of the face and the upper portion of the cerebro-spinal system. In these cases there is no deformity or destruction of tissues, as in the tubercular disease; no ulceration about the nose, palate, or throat, &c.; but the sufferer is dejected in mind and apathetic.

Dr. Bowerbank.

2. I have not seen any case in either of its forms prior to four years of age. At, and soon after this age, I have met with many examples of the tubercular leprosy; but I have not seen any case of the anæsthetic earlier than the eighth or tenth year, and not later than the meridian of life, while the tubercular occurs not unfrequently at a very advanced age.

Dr. Fiddes.

I have seen elephantiasis tuberculata in a child three years old; but from four or five years, or indeed at any age up to 50 or 60, it may appear. The majority of patients I have seen have been adults from 20 to 40 years of age. I do not remember a case of elephantiasis anæsthetica under 15 or 16 years. *Dr. Bowerbank.*

3. The full development of the disease and its common duration are much influenced by external circumstances. The anæsthetic form is more protracted in duration, and holds out a better hope of recovery than the tubercular, which in its confirmed stage is all but incurable. *Dr. Fiddes.*

I think, as a general rule, the premonitory stage of elephantiasis tuberculata ranges from 2 to 18 months. Sometimes the disease, when once manifested, runs its course very rapidly. In the great majority of cases death ensues from some supervening disease, as dysentery or other bowel complaint, or from laryngeal or pulmonary disease. Without any statistics, I would say it is generally fully developed in two years after its first external manifestation, and that most patients live for 9 or 10 years from the first attack. I have seen three cases apparently run their entire course in about 12 years. I have known a few affected for 18 or 20 years.

The anæsthetic elephantiasis is generally much slower in its progress. After the loss of the toes and fingers, the disease often appears to be arrested. Patients have lived for 30 years and more after the first manifestation. *Dr. Bowerbank.*

4. I believe that females suffer less from leprosy tham males, but cannot supply any statistics on the point. I have been struck with the fact that when the disease attacks the sexes at an early period of life, the effects of it on the development of the body and on the evolution of the genital organs have been less severe in the female than in the male.

Dr. Fiddes.

I have no statistical data to form an opinion, but I believe that males are much more frequently affected with tubercular elephantiasis than females. The same remark applies to the anæsthetic form. Females are, comparatively speaking, seldom attacked.

Dr. Bowerbank.

5. The white European population is comparatively exempt, the coloured and black suffer in nearly equal proportion, and the Jewish inhabitants are probably afflicted most of all.

Dr. Fiddes.

"As the disease occurs in Kingston, the different races composing the population are not attacked in similar proportion. The population is in round numbers 30,000, comprising 16,000 negroes, 10,000 people of colour, 2,500 whites, and 1,500 Jews. The ratio in which these races suffer from leprosy is nearly 1 per cent. in the Hebrew race, about 2 per thousand in the dark races, and so much less is the liability among the white European that I know of five cases only to have occurred among them during 15 years' practice in the city. Of these five cases, three were in natives (creoles), one was born in St. Domingo, and the fifth was an Englishman who had resided in Jamaica for 12 years before his seizure. * * Nearly all the Jewish residents, as well as the black and coloured inhabitants, are natives of the island, or have lived long in it; whereas most of the other class have been either born and reared in Europe, or are descended directly from an ancestry that were so."

Edinburgh Medical Journal, June 1857.

It is decidedly more frequent among the Jews than among any other races or classes. The well-to-do and the poor Jews suffer equally. Next to them come the coloured descendants of Jews, then the coloured races, then the blacks, next the creoles, i.e., the descendants of Europeans, and, last of all, whites from Europe. As to the last named, I have heard only of one case. I am unable to state in what relative frequency the disease occurs. We have no reliable data.

Dr. Bowerbank.

6. It is more common on the sea shore and on the flat inland districts than on the hilly and mountainous regions.

Dr. Fiddes.

The disease appears in all classes; among the well off and those that are not. It ha always appeared to me to be more frequent on the sea coast; but we have no data. In the city and parish of Kingston, which by the Census of 1861 contained 27, 350 persons, only 41 were put down as affected with leprosy, viz., 24 males and 17 females; whereas there is evidence enough to prove that there are at least from two to three hundred lepers in Kingston. The same return states that there were 778 persons affected with leprosy in the whole island.* I do not believe that one half or a quarter of the cases are included in the list, nor do I place any trust in the proportion of the sexes as stated.

a. I think the most malarial districts in the island are St. Thomas-in-the-Vale, St. Thomas-in-the-East, St. Elizabeth, Westmoreland, and St. John's, and that these are the parishes which yield the worst cases of anæmia; but I am not aware that they furnish many cases of leprosy.

b. Persons residing in the best dwellings and in the worst appear to be equally liable.

*

Parishes.	Sex.		Total.	Parishes.	Sex.		Total.
	Male.	Female.			Male.	Female.	
Kingston	24	17	41	St. Ann	13	28	41
St. Andrew's	19	30	49	Clarendon	9	7	16
Port Royal	3	8	11	Vere	9	3	12
St. David's	8	13	21	Manchester	12	12	24
St. Thomas-in-the-East	34	35	69	St. Elizabeth	42	38	80
Portland	7	5	12	Westmoreland	62	47	109
St. George	4	4	8	Hanover	28	33	61
Metcalfe	6	8	14	St. James	29	26	55
St. Catherine	6	7	13	Trelawny	44	39	83
St. Dorothy	4	6	10				
St. John	11	3	14				
St. Thomas-in-the-Vale	7	10	17	Total	391	387	778
St. Mary	10	8	18				

On reference to a map of the island, the sea board parishes will be readily recognized.

c. The cleanliest and the dirtiest appear to suffer equally. The Jews, who are very cleanly in their habits, appear to suffer most.

d. The Jews and coloured people generally consume a large quantity of fresh as also salted and kippered fish. The lower classes often consume salted food in an offensive state.

e. Persons of all trades and occupations are attacked.

As yet I fear we can say but little as to the circumstances which favour the development of the disease in individuals or in groups of individuals. Many here consider the disease to be hereditary, and to spread alone in this way. *Dr. Bowerbank.*

7. When once the disease has fairly manifested itself, the conditions and circumstances of life seem to be of little or no importance in controlling its progress. *Dr. Fiddes.*

In all cases of elephantiasis tuberculata, the disease once developed has appeared to me to progress steadily; slower sometimes than at other times, and then without any assignable cause. I have known many of the poorer classes affected with it, although exposed to great privations, drag out an existence of about nine years. Independently of their hideous appearance, they seemed to enjoy life.

The elephantiasis anæsthetica often runs a very protracted course. The organic functions appear to be well performed. *Dr. Bowerbank.*

8. It is frequently hereditary, particularly in the third generation. I have known several instances where one member of a family only has suffered; but the instances are more common of several members of a family being afflicted. *Dr. Fiddes.*

"A large proportion of the sick admit a leprous ancestry, or a consanguinity with persons so affected; but in other cases no such source of contamination can be traced, and the disease may arise evidently in other ways. . . The disease in many cases could be attributed only to spontaneous or endemic origin. . . . The influence of hereditary transmission is greater on the maternal than on the paternal side." *Loco cit.*

I believe the disease to be hereditary, although in very many cases it appears to miss one, two, or even more generations. It is very difficult to trace the family history of the coloured classes.

I have known instances where only one member of a family has been affected, all the other members remaining free. I know one family where three members had the disease during childhood, the father and mother being both free; but the maternal grandmother had it at a very advanced age. *Dr. Bowerbank.*

9. I have not. I think it is a disease sui generis. *Dr. Fiddes.*

I believe it to be a disease sui generis. I have little doubt that yaws and leprosy may run their course together; so also leprosy and syphilis. *Dr. Bowerbank.*

Respecting the yaws, Dr. Bowerbank adds, that in 1836, when he first went to Jamaica, there was not an estate or penn that had not its yaw-house or hospital, and which used to be well filled; but after the emancipation, in 1837, these were all done away with, and now many practitioners who have been in practice for years have not seen a dozen cases. I am assured, however, that within the last few years the disease is again on the increase, and most certainly within the last few months I have seen more cases than during 20 years previous. The sudden disappearance of the malady was certainly a striking feature in its history, if it be as contagious as it is generally reputed to be, for the doing away with the hospitals should have increased its dissemination.

By the Census of 1861 I find the number of persons affected with yaws to be 618; but the statement I think to be erroneous, as many diseases are put down as yaws which have no relation to that disease.

I do not think that the importation of Africans of recent years can account for the recent increase of the disease. As regards this disease, something ought certainly to be done, as our prisons and lunatic asylums are subject to have cases sent constantly to them. I find that at Sierra Leone cases are admitted into the hospital there, and I believe that the same might be done here with impunity. Such, however, is not the general opinion. A poor unfortunate with yaws, or having the credit of having it, may die in the streets of Kingston. He or she becomes an outcast, as experience here has proved.

10. I am certain that it is in no way contagious, and that it is not transmissible by sexual intercourse. Numerous cases under my observation confirm this view; in fact, the negative evidence against the contagion of leprosy, in all its forms, is irrefragable. *Dr. Fiddes.*

"The rigid seclusion to which lepers were subjected in former times, and the careful manner in which they are still avoided, arise in great measure from the popular belief in contagion. But this erroneous opinion should be discouraged, as being unjust to the unfortunate sufferers, and tending to deprive them of the sympathy and assistance which they might otherwise obtain." *Loco cit.*

I do not believe it is contagious in any of its stages, nor do I believe it can be transmitted by sexual intercourse. I have known a man to live with his wife for 16 or 18 years after he had elephantiasis tuberculata, and have children by her during the time; he died in an advanced stage of the disease, but she never suffered. Two of the sons, however, were attacked. Again, I have known a man live for years with his wife, who was leprous, without his suffering. *Dr. Bowerbank.*

11. Lepers are permitted in Jamaica to go at large without restriction. *Dr. Fiddes.*

Hitherto, no restriction has been imposed; lepers are permitted to communicate freely with other persons. Latterly, in consequence of the increased number of lepers about the streets of Kingston, and the undoubted increase of the disease throughout the island, alarm has been excited generally, and some restrictions have been called for by the public press, the more so as latterly some lepers have found it to their pecuniary advantage to frequent the thoroughfares, and to place themselves at the doors of the most frequented stores. In some instances they have seized goods, knowing the owners would not have them after they had been touched. In this way they have put all authority at defiance.

Dr. Bowerbank.

12. There has not been hitherto any asylum for lepers in this colony. The legislature has recently passed an Act for such an institution, but it has not yet been established. Lepers are not admitted into any of the general hospitals. This is probably owing, partly to the antiquated notion of its being contagious, and partly to the slow and protracted character of the disease. There can be no doubt, however, of the propriety of establishing a lepers' hospital. *Dr. Fiddes.*

In Kingston, and, I believe, in Falmouth, the leprous poor are allowed a pittance weekly. In Kingston this is 2*s.* to each person, and a miserable wooden hovel of two rooms is provided for them on the sea-beach; but no restraint is maintained over them, spending the day begging about the town, and returning to the hovel at night. One of them, more exacting than the rest, made a treaty with the corporation, to have 10*s.* 6*d.* a week, on condition that he remained at home. This arrangement was kept till he died a few months back. The place provided for them is a disgrace to any civilized community. They have no medical treatment. Lepers are excluded from the public and parochial hospitals. Besides the place in Kingston, I know of no other elsewhere provided for their reception. I believe they live in huts near the town of Falmouth. *Dr. Bowerbank.*

Dr. Bowerbank adds copies of two recent (1859 and 1862) Acts of the Jamaica Legislature respecting the providing of a "Lepers' Home" in Kingston (vide Appendix), and adds, "I fear "there will be great difficulty in providing a place for 'lepers.' The great majority of persons "are loud in their cry for their exclusion from the streets and thoroughfares; but every one "resists the formation of a lepers' house in the district in which he may reside, or near the "spring from which he obtains water, or near the river which flows near his residence. The "consequence is, that if a place is fixed on by the authorities as suitable, it is immediately "bought up, or an outcry is raised."

13. I cannot do so. There are about a dozen lepers in this city (Kingston) maintained at the expense of the corporation, which grants 3*s.* a week to each. They are kept in an old building on the sea-shore, formerly an asylum for the destitute poor of the parish. It is miserably dilapidated, and filthy, and the condition of the inmates deplorable. (Vide Appendix, p. 205.)

I am not aware of the number of lepers maintained by the other country parishes. I believe that several get a pauper allowance, and are left to provide for themselves.

Dr. Fiddes.

I cannot. I believe about 14 or 15 in Kingston receive 2*s.* each per week. Many others beg about the streets. *Dr. Bowerbank.*

14. I have every reason to believe that it has been progressively increasing in this city, and in the island generally, during the last 12 or 15 years. The fact is well known to the public and to the profession, so far as Kingston and other towns are concerned. This increase may probably be due to a variety of causes, of which the hereditary transmission of the disease by the sexual intercourse of lepers may be one of the most important, though, perhaps, the chief exciting and predisponent causes are to be found in the retrogression towards barbarism among the bulk of our population. The decline and fall of social position must always lower the standard of health and increase the liability to disease. The degraded condition of the majority of our people in their dwellings, their food, and mode of life must tend to produce a dyscrasia of the blood, and to foster the development of leprosy. *Dr. Fiddes.*

I have been in active practice in this island during the last 28 years, and I am quite confident that during this period, more especially during the last 15 years or so, the

disease has been on the increase. My attention has been particularly called to the number of young persons attacked—from the age of five up to puberty—with tubercular leprosy. I believe an increase of the disease has been evident elsewhere.

I am not prepared to offer any opinion as to causes which have contributod to its increase. *Dr. Bowerbank.*

15. In the majority of cases, treatment is unavailing. In the early stage of the tubercular form, benefit is occasionally derived from hydropathic treatment, and by the application of the tinct. iodinii to the affected parts, and of the iodide of potash internally. Flannel should be worn next the skin, and all hygienic means to improve the general health be strictly observed. I have seen a few, but very few, cases where the disease has undergone a spontaneous cure. *Dr. Fiddes.*

" In tubercular leprosy, the morbid action is very seldom removed, but implicates the " organism more and more ; and in an advanced stage the case is all but hopeless. But in " anæsthetic leprosy, not unfrequently the disease expends itself, when the patient may " live through the ordinary term of life, showing no trace of the disease, except the mutilation " of the extremities and the leprous expression of the countenance." Dr. Fiddes mentions two such cases, both in females. One of these occurred in a negress 55 years of age, and the other in a woman who had reached the age of 80. In the first, " a period of 15 years has " now elapsed since the cessation of the disease, and her health since has continued good. " Both feet have been removed through the metatarsus, and all the fingers, and the thumb " of both hands at the metacarpal joint. She earns a livelihood chiefly as a washerwoman." In the other, where an equally extensive destruction of the extremities had occurred, the patient at the age of 80 was still in good health. . . . . " I have seen in some cases " of recovery that there was not only a reduction of the nerves (the nervous trunks of the " affected extremity) to their natural size, but also a restoration of sensibility in the " mutilated extremity. *Loco cit.*

As far as my experience goes, all treatment has been very unsatisfactory in both forms of the disease.

In only one case did medical treatment seem to keep the disease in check. During 18 or 20 years, the patient, a female, had repeated attacks of apparently intermittent fever, and on each occasion the characteristic spots made their appearance ; she had also anæsthesia and slight enlargement of the eyebrows and lobules of the ears. The use of Fowler's solution always checked the disease. She died of cholera in 1850. I understand a son of hers has since shown unequivocal signs of the malady.

I have never seen a case of spontaneous cure. I have seen protracted cases, but still the disease progressed. In some cases of E. anæsthetica, after the violence of the disease has been expended upon the fingers and toes, there appears sometimes to be an arrest of the malady ; that is to say, there are no other symptoms observable. *Dr. Bowerbank.*

16. The population, according to the Census taken 5th May 1861, consisted of,—

Whites	- -	13,816 = 7,295 males and 6,521 females.
Coloured	- -	81,074 = 38,223 males and 42,842 females.
Blacks	- -	346,374 = 167,277 males and 179,097 females.
		441,264

being an increase of population since 1844 of 63,831.

There is no registration of births and deaths. *Dr. Fiddes.*

Of the total population, according to the Census of 1861, there were 213,521 males and 227,743 females = 441,264.

Dr. Bowerbank remarks, " there is good reason to doubt the correctness of the above " returns in many respects." He adds the following comparative table of the population in 1844 and 1861.

Census Returns 1861 of Jamaica.

Blind - -	1,234	Males - 558 Females 676	Insane - -	461	Males - 204 Females 257
Deaf and Dumb -	640	Males - 281 Females 359	Yaws - - -	1,512	Males - 894 Females 618
Crippled - -	5,986	Males - 2,704 Females 3,282	Leprosy - -	778	Males - 391 Females 387

Comparative View of the Census Return of 1844 and 1861.

	1844.	1861.		
White	- 15,776	- 13,816	Decrease	- 1,960
Brown	- 68,529	- 81,074	Increase	- 12,545
Black	- 293,128	- 346,374	Increase	- 53,246
	377,433	- 441,264		
Total increase in 17 years - 63,831				

A few years back, an Act for the registration of births and deaths throughout the island passed the legislature; but, except as regards the payment of the officers appointed, its provisions were not complied with, and, after three or four years, it was repealed. Attempts have subsequently been made to re-enact this important Bill, but I fear the majority of the members of the legislature do not understand the necessity or usefulness of the measure.

Dr. Bowerbank.

17. Whatever would tend to improve the general sanitary condition of our population would also tend to avert the appearance of leprosy; and the best way of dealing with the disease, as it at present exists, would be to gather together the lepers scattered over the country, and place them in one or more institutions, where they would be secluded from the public. By keeping the sexes apart, the further extension of the disease by hereditary transmission would be prevented. I shall be happy to communicate any further observations, if desired to do so, and also to forward any pathological specimens, if these be thought likely to throw any light on the intimate nature of leprosy. *Dr. Fiddes.*

" At whatever point of the skeleton the disease be arrested, whether at a joint or in the middle of a bone, nature always furnishes an ample soft covering for the defence of the asseous surfaces; and so thoroughly is this accomplished, that leprous amputation will always bear comparison with the most finished performance of the surgeon. It is also remarkable that a trace or vestige of the nail often remains on the face of each phalangeal stump; and, even when the disease has removed a portion of the metacarpal bones, the vestiges of these horny appendages are still observable in many cases. In these instances, the skin which forms the nail matrix is not entirely destroyed; a remnant is left, which preserves its secreting action, and is drawn gradually backwards until it comes into contiguity with the second phalanx, or with the first, or with the end of the metacarpal bone; the transposition being effected by the shrinking of the intervening skin."

* * * * *

" The morbid element of joint-leprosy is a viscous glairy exudation of a yellowish-white colour, and not so opaque and granular as the matter of the tubercular variety. It is effused within the neurolemal sheath, and occupies the meshes of the cellular membrane which surrounds and accompanies the several nerve fasciculi. Being confined within the common sheath, the deposition is injected minutely along the nerve branch, increasing the diameter of the tube and interrupting the transmission of its electric current. The nerve then swells and increases in thickness, but without much change in its shape or form, and the deposition may be in sufficient quantity to enlarge it to double or triple its natural diameter. Thus I have found the great nerve branches of the arm as large as the little finger, and this abnormal condition may be ascertained, sometimes during life, as applying to all the main branches; but the ulnar nerve is that which, from its superficial and isolated position, is most readily examined in the living body. All the nerve branches of the limb are not invaded simultaneously by the morbid deposition, and the position and extent of the anæsthetic patches indicate the particular ramifications which are primarily involved. Thus, where the insensibility is limited to the ring and little fingers and a corresponding division of the hand, the ulnar nerve is affected chiefly; and where the anæsthesia is circumscribed in the thumb or radial side of the hand, the museulo-spiral branch is the principal seat of the effusion." *Loco cit.*

Dr. Bowerbank remarks, " a few years ago Dr. Scheida, from Bavaria, arrived here, and " was engaged in researches on the infusoria. He examined the blood of several patients " suffering from both forms of elephantiasis, and found it deficient in the red corpuscles."

No. 5.

TORTOLA. (Virgin Islands.)

1. Leprosy is rare in the Virgin Islands.

I have seen one case in a white young woman, and two in black women, all in a mild form.

2. I have never seen the disease except in adults; one was 20 years of age, and the other two 50 years.

At what age it made its appearance I cannot say.

3. I cannot say. The patients are living, and apparently otherwise in good health.

4. The cases I have seen are in females.

5. No information.

6. It occurs in the lowest class.

7. No information.

8. I have had no opportunity of judging.

9. In my opinion, it is a disease by itself.

10. The patients I have seen intermix with other persons. I have heard of no instance where the disease has been communicated.

11. There is no restriction.

12. No public provision is made. There have been none admitted into the hospital, gaol, or poorhouse, during the eight years I have been here.

13. No information.

14. No information.

15. No information.

16. By the last Census, on April 1st, 1861, the population of the Virgin Islands was estimated at 4,018 blacks, 1,557 coloured, and 476 whites; total 6,051.

There is the registration mentioned above. It commenced on the 1st of January 1859, and has existed up to the present time.

Dr. King.

No. 6.

ST. KITTS.

1. It has been long known in St. Kitts.

It exists under two forms; the first is distinguished by circular livid shining spots in various parts of the body, particularly the extremities, also by a shrinking of the extremities and stiffness of the joints, the fingers and toes especially, and ultimately a gradual loss of these members. As the disease advances, the voice becomes nasal.

The second form is the tubercular; appears generally at first in the face and forehead, with purple and swollen ears. The tubercles become scaly and often ulcerate.

These two forms are regarded here as varieties of the same disease.

2. All ages are liable; the disease seldom occurs in early childhood, but generally about 10 years of age and upwards.

The gradual and slow formation of the tuberculous elevations, with occasional discolouration of the surface, and general impairment of health, mark the first invasion.

3. About 30 years of age. The tubercular form is the more rapidly fatal. Some patients live many years.

4. A larger proportion of males appear to be attacked.

5. We have no data to answer this satisfactorily.

6. Among those exposed to vicissitudes of weather, checked perspiration, and especially in those of a tubercular diathesis.

a. It has been found to occur most in damp localities, irrespective of hills or plains, country or town.

c. Habits of life possibly exercise an influence, but it sometimes attacks those scrupulously clean and moral.

d. Not much influenced by diet or general way of living.

7. Cannot say.

8. The disease has an hereditary tendency. Cases occur where this is clearly traceable.

9. No.

10. No instance has been known where the disease was communicated by direct contact; but it is probable that it is transmissible by inoculation.

c. There appears to be no risk from sexual intercourse, provided there is no abrasion of the parts.

11. Lepers communicate freely with the rest of the community. There is no restriction imposed on them, and they may locate themselves where they please.

12. There is no building provided for their reception, neither are there any enactments relating to the leprous poor.

A weekly allowance, from one to two shillings, is made to each by the Board of Guardians of the hospital, on the report of the district medical officer.

13. The number that receive relief is 47.

14. It is not considered to be increasing.

Medical men are of opinion that a more favourable state of things might exist if public provision were made for the treatment of lepers.

15. We are not aware of any case of spontaneous cure; neither have we witnessed any marked improvement in the condition of lepers from medical or other treatment.

No leper is treated at the expense of the colony.

16. The population, according to the Census in 1861, was 24,440.

Within the last four years a system of registration has been established for births and deaths, including the causes of death; but, in consequence of there being no provision for compulsory medical certification of the cause of death, the registry is full of errors, and is worthless as a record.

17. The island is divided into the following parishes—

	Population.	No. of Lepers.
St. George	7,308	10
St. Peter	2,052	2
St. Mary	1,780	5
Christchurch	2,266	9
St. John	2,389	9
St. Paul	1,661	4
St. Anne	3,392	6
St. Thomas	2,370	1
Trinity	1,085	1
	24,303	47

Dr. Swanston.
Dr. Semper.
Dr. Boon.

No. 7.

NEVIS.

It is endemic in this colony.

There are two varieties of the disease.

a. Tuberculous leprosy, characterised by grey or bronze-coloured spots, which are insensible to the touch, except in some rare cases where they are extremely sensitive and irritable. The spots affect generally the forehead, eyes, nose, ears, and the limbs. Frequently they remain indolent for years, when they pass into the tuberculous state; the tubercles or tumours vary much in size, some being as large as a filbert or walnut, or even larger. A suppuration, which dries up in thick and dark scales, attacks them, either partially or wholly. The ears and nose swell enormously, and have a misshapen and hideous appearance. The interior of the nostrils and the palate is also frequently affected. The features become deformed, the nostrils dilate, the lips thicken, the ears become monstrous, the hair of the head falls off, the eyebrows and lashes drop off, and the face assumes a revolting appearance, which is increased by the general bronze hue of the skin. The sufferer always looks much older than his real age. The extinction of the voice, the obtuseness of the senses, the weakened eyesight, &c., adds to the wretchedness of the sufferer. The cellular tissue of the upper and lower extremities becomes engorged, the skin is shining and wrinkled, especially on the back of the hands and feet, while the soles of the feet swell considerably and develope flat tubercles. The tubercles on the fingers and toes frequently suppurate and ulcerate.

b. Red leprosy is characterised by spots of a greyish red appearance, irregular in form, and more than two inches in size, on the forehead, face, neck, and breast and body. The spots usually remain indolent. Tubercles form equally on the fingers and toes, and disorganise the extremities as in the first variety of the disease.

2. The age is quite uncertain. The first appearance is generally that of spots on the forehead, eyes, nose, and ears, but sometimes tubercles form without any antecedent spots.

3. These periods are very uncertain. If a child, while nursing, is attacked, it will seldom attain 17 years of age. The duration of the disease may be prolonged to 18 or 20 years.

4. It is not more frequent in one sex than in the other.

5. Though more common in the black and coloured population, it also attacks the whites, of whom there are only 270 in the colony.

6. The disease is most frequent in damp localities, or where the dwellings are close and badly ventilated, quite irrespective of urban or rural districts.

The sanitary condition of the dwelling and its immediate neighbourhood materially affects the progress of the disease.

Where the patient is dirty, and where meat is exclusively used for diet, or, in the case of negroes, whose lymphatic system is affected by their food, which consists of vegetables and saltfish, the disease gains ground rapidly.

7. Stated above.

8. The disease is hereditary. In several families, white as well as black, certain members have become lepers, while the other members remained free from any trace of it. The leprosy sometimes passes over one generation.

9. In the case of children who have inherited leprosy from their parents or wet nurses, the same appearance is presented as in venereal affections.

When yaws are neglected they become constitutional, and in the case of careless dirty negroes present the appearance of leprosy.

10. Has never met with a case where the disease appeared to be contagious. Has known a healthy man married to a leprous wife remain exempt, while the children inherited the disease.

11. There is no restriction on lepers in Nevis.

12. There is no public provision. Lepers are admitted into the "asylum," which is an ordinary building. No provision is made for regular medical attendance.

13. There are five lepers maintained in the asylum.

14. It is not on the increase.

15. Good nourishment and alterative medicines may mitigate sometimes the symptoms; but the disease is generally incurable. It never undergoes a spontaneous cure. None of the lepers in the asylum recover, wholly or even partially.

16. By the Census in 1861 the population was 9,800.

There is a general registration of births and deaths established since 1860.

Dr. Augustin.

17. It is confined to no one district. *Sir. A. Rumbold,* President of Nevis.

No. 8.

MONTSERRAT.

1. Yes.

There are two varieties, known popularly and respectively as "leuta" and "the leprosy." They are in my opinion merely stages of the same disease.

The first change in leuta I have observed is that of an alteration in the cutaneous pigment. Patches of integument, from which the pigment has for a variable time been lost, become studded with tubercles which subsequently ulcerate. When the phalanges (lines and flexures) of the fingers and toes are the seat of the disease, the joints slowly, and, in most cases, painlessly sphacelate through, leaving the carpus and metacarpus only remaining. Anæsthesia of the patches is marked, and this condition extends more or less over the whole body. The hair is lost.

2. Infancy and the period of life when vital power begins to wane (this in the mixed race here is frequently at 30 years of age) appear to be especially favourable to the invasion of the disease.

A cachexia generally precedes the local manifestations.

3. I have seen mutilation of the fingers and toes complete at the age of eight or nine years; and I know of instances where the disease has remained stationary at the pigmental (so to call it) and the tubercular stages respectively for from 12 to 20 years.

The disease, *per se*, does not materially affect the duration of life; but the subjects of it succumb readily to other diseases, such as intermittent and remittent fevers.

4. Males are much more frequently affected than females.

5. The mixed race, the coloured, is by far the most liable to the disease.

6. It is confined to the poorer classes.

a. It exists indifferently in various districts of the island. Situation seems to have little influence.

b. The sanitary condition of the dwellings of the lepers and of their immediate neighbourhood is defective.

c. Little attention paid to personal cleanliness.

d. Diet almost exclusively vegetable, and the way of living poor.

e. The majority of the persons affected are of the agricultural class.

7. Poverty and its attendant miseries.

8. Yes, in by far the majority of instances.

I know of one instance in which one member only of the family is affected; he is between 40 and 50 years of age.

9. I have no reason to think so.

10. No.

c. No.

11. There is no restriction imposed by law.

Lepers may communicate with other persons; but practically they are segregated, as they appear to prefer dwelling altogether apart from their fellows.

12. A small building, called the "lazaretto," and capable of containing six persons in separate apartments, is provided by the colony for lepers; it is a detached part of the establishment for the reception of the sick and infirm poor. It is a wooden structure, with six small apartments, each for one inmate.

The inmates are visited by the public medical attendant of the colony.

13. The six in the lazaretto are wholly provided for, and a small money allowance is granted to two or three others as out-door relief.

14. Unable to say.

15. Cleanliness, and a regular supply of mixed food, seem to have a beneficial influence, in arresting the progress of the ulcerative stage. Tonic medicines also appear to do good.

In some instances the disease does not advance after the cicatrisation, which sometimes takes place, of the remnants of the hands and feet.

16. By the Census of 1861 the population consisted of—

Males - - - - - -	3,447
Females - - - - - -	4,198
	7,645

A systematic registration of births and deaths, including the cause of death in such cases as have been attended by a qualified practitioner, has been in operation since October 1861.

17. My opinion is that leprosy is a manifestation of the scrofulous diathesis, and that it is to the adoption of the general measures acknowledged to be mitigatory of this diathesis that we must look for the prevention of the development of the disease.

Dr. Steventon, Public Medical Attendant.

No. 9.

ANTIGUA.

1. The leprosy (elephantiasis Græcorum) is known in Antigua under two forms, the *tubercular* and the *anæsthetic*. In my opinion they are only varieties of the same disease, as I have seen the two forms in the same family.

a. The *tubercular* form begins with reddish blotches, somewhat resembling urticaria, but permanent, occupying chiefly the lobes of the ears, the alæ nasi, eyelids, chin, and upper part

of the cheeks, also the fingers, the outer surface of the elbow joint and forearm. The skin of the buttock also shows large discoloured patches resembling psoriasis. The toes are swollen, and subject to ulceration. The symptoms continue for years, the tubercles increasing in size and number. At length the mucous membrane of the mouth, fauces, and larynx becomes affected, and the patient is exhausted by disease of the respiratory or digestive organs.

b. The *anæsthetic* form is not characterized by tubercles, but by patches of discoloured cuticle resembling *pityriasis versicolor* on various parts of the body, in which sensibility is nearly lost. When the patches affect the forearm or front of the leg, the extensor muscles are paralyzed. The fingers are permanently contracted, and progression is effected by throwing the feet forward by the action of the muscles of the thigh. Vesications occur on the joints of the fingers and toes, followed by deep ulcers, which terminate in spontaneous amputation of the affected member. The plantar surface of the foot is often affected with a deep callous ulcer like a hole made with an auger, and which discharges an offensive ichor. The features are not disfigured by this form of the disease, except when the eyelids are affected, and ectropium is the result.

2. I have known the disease in children of five years, and I have seen it manifest itself for the first time at the age of fifty.

When it attacks in infancy, there is sometimes a complete arrest of development. I knew a fine youth in whom it appeared at eight years of age, and although he lived to the age of 24, he did not increase in stature, and the genital organs were not developed.

3. I have seen it fully developed at all ages. If the patient is not affected with any other intercurrent disease, it is many years before it proves fatal. The tubercular form is most fatal, terminating usually in disease of the mucous membrane of the air passages and digestive organs.

4. The disease does not appear to be more frequent in one sex than in the other. In our lazaretto there are 22 patients, 11 of each sex. In a family of six children, two sons and two daughters were affected; one of each sex with the tubercular form, and the others with the anæsthetic.

5. In my experience it does not affect one race more than another. The number of cases which I have attended among the whites is as great as that of the blacks, in proportion to the population. It is more prevalent in the white race whose ancestors for three or four generations have resided in the tropics than in Europeans.

6. My experience of the disease being confined to the small island of Antigua, which does not offer much variety of topographical characters, and having met with cases in persons well fed and clothed, and accustomed to the modes of living of the best society, as well as in the humble labourer and his offspring, who subsist chiefly on farinaceous food and salt-fish, I am not prepared to state what outward circumstances are most favourable to the development of the disease.

7. I am not aware of any circumstances which seem to accelerate or aggravate the disease.

8. It appears to be hereditary, but I have known five instances of white families, consisting of several individuals, of whom one member only was attacked, while the other brothers and sisters continued free.

9. No. One instance only has come to my knowledge where such a suspicion was entertained, and treated with mercury and sarsaparilla at first, but without success. It was that of a young Scotchman who came to the West Indies in perfect health. After 15 years residence in the tropics, he married a Scotch lady by whom he had two healthy children. Soon after his marriage the tubercular form of the disease appeared in him; and as he had led a licentious life prior to marriage, he suspected that the symptoms were due to secondary syphilis. It is rather remarkable that the female with whom he cohabited before marriage was attacked with the same disease, while his widow and children up to this time remain perfectly healthy. The disease proceeded to its usual fatal termination with him, in spite of all treatment.

10. I have not met with any case which I could attribute directly to contagion. I have met with several where more than one member of the same family had the disease, but this might be ascribed to hereditary contamination. I have known several instances where the wife has cohabited with the diseased husband without being affected herself; and in one instance all their offspring were affected with it.

11. We have had a lepers' hospital for the last 25 years, for the relief of destitute lepers, to prevent them from becoming vagrants and mendicants; but segregation is not enforced, nor any restrictions imposed.

12. The leper hospital is under the superintendance of the poor law guardians, and is attended by their medical officer. It consists of twelve rooms, six on the two opposite sides of a parallelogram, with a house for the superintendent, and a chapel at one end. The rooms are capable of accommodating three or four patients each, but at present there are only 22 inmates, It is situated in the leeward suburbs of the city, not far from the sea, where the lepers may bathe when they please.

13. At present there are 22.

14. After emancipation, in 1834, it appeared to be on the increase among the lower orders; but I believe this was owing to cases coming more prominently before the public, which formerly were kept on the estates and supported by their masters.

15. Arsenic is the only remedy which in my practice has had any effect in arresting the disease, and that only for a time. I have seen the tubercles disappear under its use, sensation restored to fingers that were incapable of feeling and using a needle, so that the patient was enabled to sew; yet the disease returned, and proved fatal.

I have never met with a case of spontaneous cure, but one which was attributed to a popular remedy, viz., soup made of the common lizard. The tubercles had certainly disappeared; but the patient had lost her sight by the disease, and the skin had an unhealthy anœmic appearance, with white cicatrices where the tubercles had existed.

16. By the last Census, taken on 8th April 1861, the population was 36,412.

For the last six years there has been a uniform registration of births and deaths, including in some cases the causes of death. The classification is that adopted by the Registrar General of England, but it does not specify leprosy. *Dr. W. Nicholson.*

No. 10.

DOMINICA.

1. The disease is known, but not very common. During a residence of 30 years few cases have come under my notice. I have seen only one form of the disease, for I consider elephantiasis as a malady of a different nature.

Among the early symptoms the patient experiences an unusual numbness in his fingers; he cannot feel or grasp any object as formerly; the alæ nasi swell, and there is puffiness of the upper lip; on the forehead appear slight protuberances, generally of a dark livid colour in white persons. These tubercles increase in size, and extend to the cheek; and there is a snuffling or stuffing in the nostrils, as from catarrh. The extremities of the fingers swell, and ulcerations form about the nails, and ultimately the joints drop off one by one. The protuberances and blotches increase in size, and extend to other parts of the body, and the face sometimes becomes greatly disfigured. The voice is sometimes almost lost. The patient sinks into a helpless and pitiable state, and at length dies exhausted. The absence of local pain when ulceration exists is a point specially to be noticed.

2. It may manifest itself as early as 7 or 8 years of age. I have also known individuals far advanced in life affected with leprosy.

3. The malady is slow in progress, and may extend over many years. I know a woman about 25 years of age, who has been afflicted with leprosy, according to her mother's account, for 12 years. She still is able to walk about, but her hands are almost useless, from the ulceration and loss of the fingers; the blotches and protuberances are spreading on one arm, and will probably soon attack the other. The face is swelled and disfigured, but not so much as in many other cases.

4. The sexes appear to be equally subject.

5. In proportion to the numbers, I am inclined to believe the disease occurs as often among one class of the population as another.

6. I am not aware that in this island the disease occurs oftener in one locality than another; nor do I know that diet and mode of living or occupation form elements in the generation of the malady. Want of cleanliness and habits of dissipation will, I believe, tend to develope the disease when a predisposition exists, and probably accelerate its course.

7. Want of care and cleanliness, scanty diet, bad lodging, and a constitution broken by dissipation, would, I believe, tend to accelerate and aggravate the disease.

8. My belief is that leprosy is hereditary, though I am not prepared to assert that the disease may not occur from causes independent of hereditary predisposition.

It is difficult to answer the second query with certainty. I have known instances where only one member of a family has been affected while the others remained free at the *time*. But as I believe that the disease may appear at any age, it would be necessary to carry the period of observation over the lives of each individual member of a family, in order to determine the point with precision.

9. No. I consider the symptoms and course of leprosy to be peculiar to itself. I had occasion formerly to see much of the disease called yaws; it is unnecessary here to detail the symptoms, but I hold that disease to be different in its nature to leprosy.

10. The disease is considered contagious among the people of the colony generally; but I never have met with any case where it had been communicated by contact, or at least so ascertained; nor have I ever heard of any well authenticated instance of the kind.

In general, patients are unable to give any very distinct account of the origin or course of the malady under which they labour.

11. No restrictions are imposed, unless the lepers are receiving relief from the colonial funds.

12. Leprous persons are not admitted into the general hospital. There are no separate infirmaries provided for them. When application is made to the poor law guardians to take charge of lepers, a dwelling, if possible, is procured at some distance from other habitations; if not, a small building is erected, and communication prevented as much as possible. A certain sum per week is allowed from the public funds for the maintenance of the patient, and he is placed under the care of a nurse.

13. I am aware of two maintained at the public expense in the neighbourhood of Roseau. In the out-districts I cannot at present precisely state the numbers, but I do not believe that there are more than two or three, if so many.

14. I am not of opinion that the disease has been increasing in this colony (Dominica) during the last 15 or 20 years.

15. The disease is generally considered incurable. I have never known an instance of cure, either spontaneously or from treatment. The preparations of iodine *appear* to be sometimes of partial benefit.

16. The population of Dominica was, according to the Census of 2d April 1860, estimated at 25,527 souls.

There is a general and uniform registration of births and deaths. The alleged causes of death are reported, but they cannot be relied upon, and the information afforded is comparatively of little scientific value. The following passage occurs in the Registrar General's report of 1861 :—"Another source of complaint arising from the want of medical "attendance is the inability to ascertain the cause of death in the majority of cases, which "precludes the preparing the regular table under that head." The Act for the registration of births, marriages, and deaths came into operation on the 1st of April 1860.

Dr. Imray.

No. 11.

St. LUCIA.

1. Leprosy is known in St. Lucia, but is less common than in some other West Indian islands.

The first appearance is that of change in the cuticle, generally of the hands, feet, or head; the skin becomes thickened, rough, and scaly. The ends of the fingers suffer most; the nail becomes bent, and pushed out of its proper place; and white patches and streaks are seen on the fingers and hands which in the black contrast oddly with the surrounding colour. The fingers become nodular; the skin loses all its ordinary appearance, is hard and leathery, and the hands lose their usefulness, from being so tightly encased. Gradually the fingers drop off. About this time hard tubercles appear on the face, trunk, and extremities; they result in open sores, which after a while heal up, leaving the most unsightly appearances. The mouth is often dragged to one side by them. The voice is lost; but, with all this, the poor disfigured wretch will eat and sleep well, and often appear strong.

Dr. Gardiner, Staff Surgeon.

Leprosy is little known in St. Lucia. During a residence of 27 years I have only seen two cases. One was in a mulatto woman, mother of a large family, none of whom have been affected. The other is in a negro man, the son of a confirmed leper. I have seen about 12 cases of elephantiasis, but I do not consider it to be any form of leprosy. *Dr. Bennett.*

2. It generally shows itself shortly before or after puberty. In the case of the offspring of lepers, it may appear at birth, and often does, in various forms of malformation. Others, again, may not present any appearance of it until 18, 20, or 25 years of age.
The earliest symptoms are thickening, roughness, and scalyness of the skin, generally of the hands, feet, or face. At first it is not unlike an old case of psoriasis. In this early stage the disease appears to be entirely local. *Dr. Gardiner.*

3. It usually becomes fully developed between 25 and 35. I think that from 8 to 12 years is the general term the disease requires to attain maturity.
It generally proves fatal between 40 and 50 years of age. *Dr. Gardiner.*

4. By far the greatest number of cases I have seen have been in women. *Dr. Gardiner.*

5. It is most frequent among the blacks, next among the coloured, and least among the whites. The whites who are attacked are generally old creoles.
The proportion of blacks affected is to whites about 12 to 1, and of coloured to whites about 6 to 1. *Dr. Gardiner.*

6. Leprosy is most frequently observed in low, damp, and swampy localities, either on the seacoast or inland.
The sanitary condition of the dwellings of poor lepers is generally as bad as it can be. The habits of the people are not conducive to healthy existence. Their diet is mostly vegetable; salt fish is the most general animal food they have.
I am not aware of a single case of leprosy occurring among the more comfortable class of the population. The patients are all of the lowest and poorest of the people.
Dr. Gardiner.

7. Bad feeding, intemperance, uncleanliness, and residence in low swampy localities.
Dr. Gardiner.

8. It appears to be always inherited. I have never known of only one case in a family affected with this disease and the rest healthy or free from it. *Dr. Gardiner.*

9. I consider it to be entirely a distinct disease, the result of a long course of vitiation of the constitution. *Dr. Gardiner.*

10. I have never met with an instance of it appearing to be contagious. It is commonly believed among the lower orders to be so; but the belief is confined to them. I have never known a case of it being contracted by sexual intercourse. I have seen the leprous offspring of a perfectly healthy mother but tainted father, and vice versâ of healthy father and diseased mother, but never observed the healthy parent suffer in the case. *Dr. Gardiner.*

11. There is no restriction imposed. *J. M. Grant*, Esq.,
Administrator of the Government.

12. There is no public provision made. They are not admitted into the general hospital; but I am informed that there is a leper in the building used as a yaws' hospital.
J. M. Grant, Esq.

13. None, except the one referred to in interrogatory 12. *J. M. Grant*, Esq.

14. No information.

15. I think I have seen cases improved by removal to good air and by nourishing food. I cannot say anything in favour of medical treatment. Never in my experience has leprosy undergone a spontaneous cure. *Dr. Gardiner.*

16. The estimated population of St. Lucia is 26,675 souls.
There is no such general registration. *J. M. Grant*, Esq.

Drs. Cavalier, Boucher, and Godineau, all of whom have been long resident in St. Lucia, informed the Administrator that having seen not more than one or two cases of the disease, which they state to be very rare in the colony, they were unable to give any satisfactory particulars respecting it.

No. 12.

ST. VINCENT.

1. Known in St. Vincent under two forms, the humid and the dry. They are distinct diseases, yet having an affinity with each other, as tabes mesenterica has with phthisis.

Humid leprosy is characterised by the swollen, knobbed, and ridgy appearance of the skin, especially of the face, the lips, and alæ nasi being much thickened, the tarsi thickened and inflamed, and the elevated portions of the skin being generally polished and shining.

Dry leprosy is known by the enlargement of the ends of the joints, beginning with the small ones of the hands and feet, but invading the wrists and ankles in its progress. The joints become anchylosed in a state of extreme flexion, and the disease is generally arrested at this point.

Dry leprosy differs in nothing from ordinary scrofulous disease of the joints, except in the locality which it invades. I therefore omit all consideration of it in the following remarks. In the humid leprosy, in its latter stages, there is also enlargement of the joints, with flexion and anchylosis. *Dr. Checkley.*

It occurs in two forms, the tubercular and the anæsthetic. They are only varieties of one morbid state.

The tubercular form is indicated by indolent tubercles on the face and extremities, tumefaction of the skin, and tendency to ulceration about the feet and toes.

The anæsthetic form, by the atrophy of one or both hands, and the flexion and contraction of the median and distal phalanges, and the permanent extension of the proximal phalanges. The feet are affected in a minor degree. *Dr. Sprott.*

a. and *b.* In my opinion there is only one common morbid condition, in a more or less aggravated development. In some cases there is much ulceration of the face, with frightful disfigurement, loss of sight, nasal snorting breathing, destruction of the fingers, &c. In other cases there is no ulceration, but merely contraction or loss of the fingers and toes. The disease appears to be invariably attended, even in the milder cases, with a loss of sensation in the extremities. *Dr. Arnott.*

2. At every age. I have seen it at all periods between 10 and 50 years.

Its approach is indicated by a bloated look of the face, and by the appearance of shining patches on the forehead and cheeks; these soon become elevated, and the lips thicken. *Dr. Checkley.*

I have never seen it in infancy, but I have in children, adults, and aged persons. A medical man has seldom an opportunity of observing it in its earliest stage; parents and relatives seclude the case as much as possible from observation. I know of one case in respectable life, where no medical man saw the case until within a few years of death.

In one case, an adult, the earliest appearance was a tubercle on the upper lip, which went on for months, progressively enlarging until the eruption became general over the body, with most excruciating sensibility of the skin. I recently saw a girl, seven years old, whose right arm dangled by her side; the hand was slightly swollen, though not œdematous; the fingers also were slightly swollen, incurved, and as it were separated from one another. There was a leprous taint on the mother's side. *Dr. Sprott.*

I have seen the disease in a boy nine years of age. He had large protruding ears, discoloured skin, voice nasal, gait unsteady, fingers swollen, a drooping of the forearms, with inclination to hang backwards behind the body.

Another patient was 26 years of age when first attacked. *Dr. Arnott.*

3. At all ages above 10 years. It runs its course from three to six years, and is usually fully developed in about two years after the appearance of the first symptoms. *Dr. Checkley.*

Neither form is so rapidly fatal as is generally supposed, unless ulceration of the extremities supervenes. The anæsthetic form without ulceration does not materially shorten life. The tubercular form, in its aggravated stage, will destroy life in a few years, partly by asthenia, partly by internal complications. *Dr. Sprott.*

4. No; the sexes are equally affected. *Dr. Checkley.*

It is most frequently seen among males; but the number of cases under observation is no criterion of the extent or prevalence of the disease. Every precaution is frequently taken to prevent its existence being known, and it may be that seclusion is more often and successfully carried out in the case of females.

There is strong reason to believe that it prevails to a great extent here. *Dr. Arnott.*

5. Most frequent among the blacks; in the proportion of five among the blacks, three among the coloured, and one among the white. *Dr. Checkley.*

I have seen many cases in coloured and in black persons. I have also heard of cases in families claiming to be of exclusively European descent. In the latter circumstances, every effort is made to seclude the case as much as possible.

It is well known that the Hebrew race, who can boast of purity of blood, are unusually liable to leprosy. *Dr. Sprott.*

It occurs, according to my experience, more frequently among the mixed race, especially in those approaching most nearly to the white, and in the pure black population, than among the pure white and the mulattos (properly so called) in the first degree. In a small community, intermarriage must influence the spread of the disease. *Dr. Arnott.*

6. Amongst the poor. I believe it to be more frequent among the town than the rural population. *Dr. Checkley.*

More cases are seen in the towns than in the rural districts, because they come to the former for charity.

b. Some live under the public galleries on heaps of rags, protected from the wind by the skins of oxen; others in wooden hovels on the beach. A few anæsthetic cases are provided for in the almshouse in connexion with the Colonial Hospital.

d. Living on charity, they must take what they can get.

e. None, unless practising on the superstitious fears of the ignorant by obeah arts.
Dr. Sprott.

I consider the ordinary diet of the population (consisting chiefly of salt fish, vegetables, corn meal, fresh fish, with a very insufficient proportion of fresh meat and bread,) to be unfavourable to the preservation of good health generally. *Dr. Arnott.*

7. I am firmly of opinion that the development of the disease is encouraged and accelerated by poor diet and indulgence in ardent spirits. *Dr. Arnott.*

8. Yes.
No. *Dr. Checkley.*
It is hereditary. *Dr. Sprott.*
Yes, in my opinion.
Yes. *Dr. Arnott.*

9. I think it is connected with scrofula, but not with any other disease. I look upon leprosy as a form of scrofulous disease of the sudoriferous and labial glands, and of the sebaceous and meibomian follicles, proceeding to scrofulous infiltration of the subcutaneous cellular tissue, implication of the ends of the bones, and ultimately of internal organs.
Dr. Checkley.

When I took charge of the Colonial Hospital, a few years ago, I found in the almshouse a Portuguese affected with yaws, and as it was contrary to the rules to have him there, he was forthwith discharged. Many months afterwards, a Portuguese boy, whom I had successfully treated for leprous ulcerations of the hands and inferior extremities on two former occasions, was admitted. While attending him the old yaw patient came in, and, on stripping them both, I was struck with the remarkable resemblance between the cicatrices on the lower extremities. The man died of ulcerated legs and diarrhœa; the boy is now an incurable leper. *Dr. Sprott.*

10. I have met with one case where the disease was said to have been communicated to a child, not hereditarily predisposed to it, by contact with a leper in whom there was ulceration with discharge. I believe leprosy to be communicable in this way, and in this way only. In the scrofulous disease of the sudoriferous glands, known here as 'letterworm,' I have observed it to extend in the direction in which the discharge flowed. *Dr. Checkley.*

I cannot regard it to be contagious. I have heard it stated to be so by others.
Dr. Sprott.

I believe that it is not contagious. I have known a man live with his wife who was a leper, for many years, without contracting the disease. *Dr. Arnott.*

11. No restrictions. They are not avoided by the negro population. *Dr. Checkley.*

Segregation and legal provision were attempted here, but the attempt failed.
Dr. Sprott.

There is no restriction. . . . I consider that isolation is an imperative necessity, and should be made compulsory. *Dr. Arnott.*

12. None. *Dr. Checkley.*

I understand some lepers are maintained at the public expence, and others by a small fund principally contributed by successive grand juries.

Some cases of anæsthetic leprosy are and have been admitted into the alms house.
Dr. Sprott.

No special provision is made. A leper would not be admitted into the general hospital. Many of these unfortunate beings beg in the streets. *Dr. Arnott.*

13. One or two receive aid from the town; the rest are supported by their families or by private charity. There are eight lepers in Kingstown. *Dr. Checkley.*

I believe there are eight; four males and four females. *Dr. Sprott.*

14. No. *Dr. Checkley.*

I have no reason to believe that the number is increased or diminished. An attempt was made by the assessors during the last Census in 1861 to ascertain the number of lepers in Kingstown alone, but the return was not satisfactory. *Dr. Sprott.*

15. The only remedies that I have seen at all efficacious in arresting the progress of leprosy are Donovan's solution and the liquor. potass. arsenitis. *Dr. Sprott.*

16. By the last Census in 1862 (1861?) the population was estimated at 31,755. There is no such registration. *Dr. Checkley.*

There is a registration of births and deaths in the principal towns, but in the large and populous villages in the interior there is nothing of the sort. *Dr. Sprott.*

No complete register of births and deaths exists here. *Dr. Arnott.*

17. I believe that lepers are in a much larger proportion to the entire population in Kingstown than in the country districts. *Dr. Checkley.*

It is extremely difficult to obtain any information about leprous patients. Should any respectable family have a relative afflicted, the sufferer will be strictly concealed, and a medical man may be in attendance on the family for years and not know that there is such an unfortunate being in the house.

I send the photographic portrait of a negro boy, who says he is 17 years of age, and who is permitted to go about begging. *Dr. Arnott.*

No. 13.

BARBADOES.

1. It is well known in Barbadoes.

a. I know of only one distinct form of leprosy, the characters of which, in the white subject, are these—firstly a pinky rose colour of the cheeks and lips, which slowly assumes a dark hue; the cuticle becomes thickened and ultimately tuberculated. At the same time, the alæ nasi and the cartilages of the ear become thickened and darker, the voice hoarse and and unnatural, and the lips thick and tender at the edges. The phalanges of the fingers and toes are swollen and indurated. In this way the disease progresses for years. The general health is somewhat impaired, and locomotion is slow and sluggish. In the last stage, in some cases, the phalanges gradually slough off from the last joint to those at the base of the fingers or toes. Generally, after the first phalanx has separated, the wound becomes cicatrised before the next is attacked by gangrene. In the negro the same symptoms accompany the disease throughout its course, but they are less evident in the first stage. *Dr. Carrington.*

It occurs under different forms, viz., lepra tuberculosa, nigricans, vulgaris, and syphilitica. 1. Tuberculous leprosy is characterised by the body being covered with livid elevated spots of variable size and irregular shape. The skin and adjacent tissues become thickened and tuberculated, especially the alæ nasi, eyebrows, lobes of the ears, and joints of the fingers and toes. Subsequently the face and joints become swollen, and ultimately attain about twice their natural size. 2. L. nigricans is attended with gangrenous ulceration, destroying the fingers and toes, and is known as the "joint evil." The ulcers discharge an offensive sanies, and never heal. Paralysis of the extensors is a frequent concomitant; the 3d pair of nerves are sometimes involved, causing a falling of the lower eyelids, and great distorsion of the countenance. 3. L. vulgaris is rare in Barbadoes; and, 4. L. syphilitica is a distinct disease. *Mr. Rogers.*

The tubercular form of leprosy is the only leprosy here, and if there be any apparent outward manifestations showing a difference, these are only different stages of the one common morbid state. By some authors the disease has been divided into two forms, viz., lepra tuberculosa and l. anæsthetica; but they appear to me to be one and the same disease, never having seen a case in which they were not more or less combined, the anæsthesia or loss of sensasion being very often the early and prominent symptom, *Dr. Clarke.*

The skin becomes thick, livid, rugose, tuberculated, and insensible, eyes fierce and staring, perspiration highly offensive, voice hoarse and nasal, falling off of the hair, particularly of

the eyelids and brows, vertigo with burning lancinating pain in the head, tension of the skin, sometimes ulceration of the joints of the fingers and toes, which, as the disease advances, slough off.

In my opinion there is only one form of leprosy, passing through different stages, and producing different appearances in different constitutions. *Mr. Moore.*

a and *b*. I have observed four forms, three of which are probably only varieties of one common morbid state, and the fourth may be distinct disease; but they all exhibit one common bond of affinity, viz., the anæsthesia, which strongly characterizes the whole group.

c. By far the most prevalent form is "elephantiasis tuberculosum" (well described by Hillary, in his work on the Diseases of Barbadoes), of which the symptoms are,—tumid, irregularly shaped, discoloured elevations of the skin, insensible, and giving the features a swollen, bloated, and deformed appearance. The alæ nasi, ears, and chin are usually specially affected. The skin around the tubercles has a dirty yellowish or more or less brown appearance, very appreciable in white persons. The hair drops off from the eyebrows and eyelids. Subsequently, the fingers and toes, which are swollen and have little or no sensibility, become the seat of ulcerations, with a fœtid ichorous discharge. The nasal cavities and bronchial passages are also implicated, and the voice becomes hoarse and snuffling. Death is not unfrequently caused by the diseased state of the air passages.

The second form exhibits, besides the features described, the additional one that the tubercles on the face are covered with thick incrustations or scabs, produced by the ulcerated surfaces of the tubercles beneath.

The third form, very rare, is distinguished by the tumefactions not being so much raised as in the other two, and by the formation of a thin scaly desquamation on the surface of the tubercles.

The fourth form seldom exhibits well marked tubercles, but the skin is here and there disfigured by yellowish and brownish spots. The fingers and toes are flexed, and incapable of extension, and there is a total loss of sensibility in and above the members affected; the phalanges of the fingers and toes drop off, one after the other, until the process reaches the metacarpo and metatarso-phalangeal articulations, where the destructive action ceases. These patients are liable to sores in other parts of the body, but in other respects they seem in good health. I have seen this form only in the blacks. It is to be noted that the stiffness and permanent contraction of the fingers frequently attend the first and other forms of leprosy.

There is no other vernacular term for the disease than that of leprosy, but persons are said to be "afflicted" who have it. *Dr. Goding.*

There are two diseases, confounded one with the other by most authors as leprosy, under the terms of elephantiasis Græcorum, lepra tuberculosa, the jerzam of the Arabians, and of lepra anæsthetica, the djuzam of the Arabians. They are popularly named in Barbadoes "leprosy" and "joint evil."

The Barbadoes leg, or glandular disease of Barbadoes, is of frequent occurrence in the island. Some writers have confounded it with the two forms, under the inappropriate terms of elephantia, elephantiasis Arabum, and elephantiasis tuberosa. It is popularly called in the island "fever and ague," and is totally unlike and distinct from leprosy or the joint evil.

Leprosy and joint evil have in their very commencement some symptoms in common, which may cause them to be confounded one with the other; but, when they are fully developed, they show themselves distinct diseases, both physically and constitutionally.

i. Leprosy, when developed, is characterised by a dusky black or dirty yellow complexion in the negro and mulatto, as if the skin was covered with a thin film of dirt, and by a livid or dirty brown or red colour in the white. The skin of the forehead, particularly of the eyebrows, and of the cheek bones, alæ nasi, lips, chin, and ears, are tuberculated and shining, as if covered with varnish, and the lobes are pendulous. The lips are swollen and everted, partially showing the teeth, and frequently fissured and sore. The hair of the scalp is thin and lank, and the beard is scanty or wanting; the hair on the axillæ, on the pubes, &c., is also deficient. The mucous membranes of the mouth, fauces, pharynx, larynx, and nasal passages, and covering the tongue and uvula, are studded with tubercles; the pituitary membrane discharges a fœtid secretion, and the sense of smell is impaired; the whole causing a frightful deformity of countenance. There is a general wasting of the muscular system, and nowhere any visible fatness. The skin of the body, arms, and thighs is meagre and loose, of a dusky, dirty, or livid yellow or red colour, and spotted about with patches of *vitiligo*, particularly on the nates, arms, and legs (that on the nates being tuberculated). These blotches are mostly insensible to the touch, or have an indistinct feeling of soreness accompanied with numbness, when pinched between the finger and thumb. From about

midway of the legs to the phalanges of the toes, there is serous infiltration of the cellular tissue of the parts, and the ends of the toes are livid and rather atrophied; the skin of the feet and legs is chapped, and discharges an offensive ichor. The backs of the hands and fingers are swollen, and the fingers stiff and painful on being bent. The inguinal glands are enlarged, and the skin covering them pendulous. The genital organs are either not properly developed, or become atrophied, according as the disease began before or after puberty; and the sexual desire either never existed, or is lost when the disease is fully developed, nor do I know of procreation having taken place in any such state of the body and constitution.

ii. The lepra anæsthetica or joint evil is characterized by paralysis of the muscles of the face, numbness of the skin, inability to close the eyelids, eversion of the under lids, and sometimes fistula lacrymalis, deficiency of the cilia and scantiness of the eyebrows, chiefly on one side, but sometimes on both; the lips are thick and chapped, and the under one everted and hanging down, partially showing the teeth. The complexion is dusky in the white, but not much altered in the black or mulatto. The muscular wasting is less than in true leprosy. There is a peculiar halt in the gait, either of one or both sides, not like the dragging of the foot in ordinary paralysis, but a lifting of the leg at the knee, with an inward and forward progression of the foot. The skin, particularly on the arms and legs, is of a dingy or dirty colour, and is spotted with brown blotches, which are somewhat thickened and insensible to the touch. The muscles of the hands and feet are wasted, the phalanges of the fingers and thumbs, and of the toes, frequently the two distal ones only, are removed by ulceration. *Dr. Young.*

There are two forms of the disease, according to my observations, and they are commonly known as "leprosy" and "joint evil." They are varieties of one disease. In the leprosy, the skin of the face, ears, chin, and nose is tuberculated, or these parts are tumified and puffy. The skin of the arms and thighs is seldom tuberculated, but thickened, wrinkled, and discoloured, sometimes scaly or scurfy, but not ulcerating; the skin of the legs is generally ulcerated.

The "joint evil," or anæsthetic form of the disease, commences with white spots on the skin of the body, hips, and arms, subsequently numbness and loss of feeling in the extremities, followed by gradual contraction of the flexor tendons, and afterwards by loss of the phalanges of the fingers and toes, and occasionally of the entire hands, and of the greater portion of the feet, by absorption, without ulceration, the nails and toes being often found on the knuckles or remaining stumps. The gait of the patient is often peculiar; he lifts his knee high, and drops the foot flatly in progression.

Cases occur partaking of the characters of both forms of the disease, such as contraction of a finger or two, with numbness in the tuberculous form, and slight tumefaction of the lips, &c., in the anæsthetic form. Of 45 patients in the lazaretto, 26 present the tubercular form, and 19 the anæsthetic. *Dr. Browne*, Physician to the Lazaretto.

It generally appears with a thickening of the integuments of the ears, nose, and fingers, and with small purplish spots (in the white) and yellowish (in the black) about the body. There are two forms, called "true leprosy" and "joint evil." I believe them only modifications of the same disease. The "joint evil" is chiefly confined to the fingers and toes, the phalanges of which become much contracted, and generally fall off. *Dr. Stevenson.*

2. When the disease is hereditary it commences from the earliest age, as a general rule; but sometimes it first shows itself at a more advanced age. *Dr. Carrington.*

In children born of leprous patients it appears to remain latent to seven, eight, or nine years of age, and then manifests itself by cutaneous appearances. A cachectic state of constitution precedes these appearances. *Mr. Rogers.*

I have seen the disease appear at almost every period of life, but most commonly, so far as I have observed, just before or about puberty. The earliest symptoms observable are spots on the face, followed by thickening of the alæ nasi, lips, and ears, and anæsthesia of the extremities. *Dr. Clarke.*

At puberty. The skin of the face has a shining appearance, with usually a yellowish spot in the centre of the forehead, extending down on each side of the nose. These appearances are soon followed by similar spots about the body. The lobules of the ears become bright, and seem as if œdematous. The alæ nasi are thickened. Then follows in some cases a straining or tightening of the skin, well marked about the lower lids, and producing a staring of the eyes, ulceration and sloughing of the phalangeal articulations, hoarseness of voice, and falling off of the hair. In other cases the whole face becomes rugose and tuberculated, without any ulcerations. I have seen this difference in two children of the same parents. *Mr. Moore.*

The age of 45 is the latest period I have known a person to be attacked, and I have once seen it unmistakeably developed in an infant soon after birth. The intermediate periods between six and twenty years of age are those most liable to its attacks.

The earliest symptoms are the appearances of "yellow spots," and insensibility of the skin to external stimuli. Thus melted loaf sugar accidentally dropped on the fingers without producing any sensation gave rise, in a young white female, to suspicion, which was shortly afterwards confirmed by leprosy manifesting itself more decidedly. The "yellow spots" alone do not necessarily constitute leprosy, or are followed by it. They must co-exist with a rough elevated or swollen condition of the parts; and if anæsthesia be also present, the diagnosis is the more certain. Generally the earliest indications are found in the elbows and knees; and I have always made it a point, when the facial signs admitted of a doubt, to examine those parts, and if the symptoms were present there at once to declare the nature of the disease. *Dr. Goding.*

It occurs at any age between 10 and 40. I have known it as early as the seventh year.

Spots of *vitiligo* on the arms and legs, and here and there on the body, first attract notice, They are of a dirty yellow or brown colour, scarcely sensible to the touch, but if pinched are slightly painful and thicker than the surrounding skin. . . . The integuments of the ears, brows, and alæ nasi, on careful manipulation, will also be found slightly thickened. Then follow the tuberculated condition of the features, and the other changes already described.

Joint evil does not, I believe, occur before puberty, nor much after that period. The earliest symptoms are spots of ephelis on the face, arms, and legs, and here and there about the body, insensible to the touch. There is a slight halt in the gait on one side, thinness of the hands from wasting of the muscles of the thumbs and little fingers, and of such as lie in the palms of the hands and between the metacarpal bones, and the thumb being forcibly drawn against the under finger; there is no bulging up of the adductor pollicis between the metacarpal bone of the one and the other; no power to compress the eyelids forcibly together, perhaps on one side only, with a slight opening between them; and on that side there is perhaps just a perceptible numbness of the skin, and weakness of action in the muscles. These symptoms slowly and gradually increase, and then the third and second phalanges of the finger and the second of the thumbs become contracted, and ulcers appear around and under the nails, and the phalanges drop off, and the skin cicatrises.

The progress of joint evil is slower than that of leprosy.

Persons labouring under these disorders usually die of inflammatory or chronic affections of the lungs and air passages, or of diarrhœa and other abdominal diseases, attended always with typhoid symptoms. *Dr. Young.*

Early in life. The earliest symptoms in the tuberculous form are small disseminated tubercles in the face; in the other form, white spots on the body, generally large, and caused by want of the usual pigmentary secretion.

Of 42 inmates of the lazaretto, the disease commenced in 29 before 16 years of age; in 7 between that age and 26, and in 6 between 31 and 54. *Dr. Browne.*

About puberty. The earliest symptoms are those already mentioned. To these I may add an alteration in the voice, a sort of snuffling, and very frequently (particularly in the worst cases) a numbness along the course of the *ulnar nerve*, with a slight discolouration and swelling of one or two fingers. *Dr. Stevenson.*

3. When the disease is hereditary it usually manifests itself at an early age, and runs its course before the adult period; but when it appears at a more advanced period, it usually terminates in death about the age of 50; occasionally, but rarely, it commences at a still later period of life. *Dr. Carrington.*

It generally attains its full development about the age of puberty. Persons so affected usually die about 35 or 40 years of age. *Mr. Rogers.*

It is not unfrequently very slow in its progress, and is often for a long time unrecognized either by patient or friends. Gradually developing itself, the patient may live for many years, nay even to old age. *Dr. Clarke.*

The periods of its full development, and also its duration, vary very much. A person may live for many years, for 10 or 15 or more years, with leprosy, before it proves fatal, while others will succumb quickly. It is not, however, a disease that generally kills quickly. *Dr. Goding.*

If the disease appears before puberty, it will be a year or two before it is fully developed, and from six to ten years, or even longer, before it proves fatal. Occurring after puberty, its development and fatal termination will be shorter and shorter as the patients advance in years. In joint evil life is protracted longer than under leprosy. *Dr. Young.*

3. Judging from the cases admitted into the lazaretto, the time of its full development appears to be at puberty or a little after. Of 17 deaths in the lazaret, five occurred before

16 years of age; six between that age and 26; and six between that and 60. The duration of the disease in forty of the present inmates is as follows:

In 6	Two years	In 4	Seven years	In 3	Thirty years
„ 3	Three „	„ 5	Eight „	„ 1	Thirty-one „
„ 6	Four „	„ 2	Ten „	„ 1	Thirty-two „
„ 2	Five „	„ 2	Twelve „	„ 1	Forty „
„ 2	Six „	„ 1	Twenty-nine „		*Dr. Browne.*

Sometimes the spots before mentioned will continue for years before the other characteristic symptoms appear. It does not seem materially to shorten life *per se*, but it greatly aggravates and renders more fatal all inflammatory diseases. Patients are generally at last carried off by gastro-enteritis or chronic laryngitis. The "joint evil" does not affect the general health as much as the tubercular form. Leprous persons seldom live to be old; some disease, aggravated by their state of health, generally carries them off prematurely. *Dr. Stevenson.*

4. I think I have seen the disease as often attack the male as the female. *Dr. Carrington.*

It is more frequent in the male sex, in proportion of about three to one. *Mr. Rogers.*

Not in my opinion. *Mr. Moore.*

I think not. *Dr. Goding.*

Not more frequent in one sex than in the other. *Dr. Young.*

There is no reason to believe that one sex is more liable than the other. Of the 45 patients in the lazaretto, 24 are males and 21 are females; 15 of the former and 11 of the latter being affected with the tubercular form, and 9 of the former and 11 of the latter with the anæsthetic form of the disease. *Dr. Browne.*

In the male sex, as far as I have observed, in the ratio of five to three. *Dr. Stevenson.*

5. There are more cases among the black population than among the white or coloured, not because the blacks are more predisposed to the disease, but owing to there being about three blacks to one white, and two blacks to one coloured, in the island. *Dr. Carrington.*

It is most frequent among the blacks, in the proportion of about ten blacks to one coloured, and is comparatively rare in the white. *Mr. Rogers.*

I should say it was most frequent among the blacks; next among the whites; and less among the coloured; but I have no data as to the relative proportions. *Dr. Clarke.*

It is not more frequent among one race than another. *Mr. Moore.*

The black population, being numerically the largest, it might seem that it is more frequent among them than among the coloured or white; but my opinion, reservedly given, is, that it is really not so. The fourth form of the disease I believe to be confined to the blacks. *Dr. Goding.*

We see more cases in the black and coloured than in the white inhabitants, but not greater than in proportion to the relative population of the races. *Dr. Young.*

There are no reliable observations to show that the disease is more prevalent in one race than the other. In the lazaret, 27 are black, 18 coloured, and 1 white. But I am confident that it is far more prevalent among the whites than the above number indicates, the aversion to accept the charities of the institution being much greater in that race than in the others. The number, 18, among the coloured, would seem to point to a greater prevalence among them than among the black, the relative proportion (according to the last Census) being 9 coloured to 25 black, and the proportion among the inmates of the lazaret being 9 to 13. *Dr. Browne.*

In the white and coloured less frequent than in the black, but I cannot say in what proportion. *Dr. Stevenson.*

6. It attacks unsparingly the higher and the lower classes. It shows itself in all parts of the island; in towns, rural districts, on the seacoast, and inland; in low damp situations and on dry hills. It developes itself in the best dwelling as well as in the most humble cottage. There can scarcely be a doubt but that cleanliness must retard the spread of leprosy. I do not think it is influenced by diet. *Dr. Carrington.*

a. It is most frequent in the lower orders of society, who live near the seacoast in low, damp, and malarial districts, in small wooden houses, with little personal cleanliness, and are irregular in their diet and general mode of living. *Mr. Rogers.*

It is most frequent among the blacks or labouring population; and though I believe it is most frequently seen in the town districts bordering on the seacoast, and rarely in the interior or high lands, yet it does not appear to be attached to any particular locality; nor am I aware of any particular circumstances which seem to favour its development. *Dr. Clarke.*

It is seen in all conditions of society, and from my observation is not more frequent in one than in another. *Mr. Moore.*

No condition of society is exempt; nevertheless, the disease is comparatively rare among the wealthy. I have ever been at a loss to ascribe its development to those conditions or circumstances referred to, nor have I observed that it is more frequent in one locality than another. Although want of cleanliness may occasionally aggravate the disease, I could never directly trace it to that cause alone. *Dr. Goding.*

It is most frequent among the poorer classes. It occurs chiefly in low-lying, dry, and hot districts, and along the seacoast. The dwellings are small and generally densely inhabited; the personal habits of the people not cleanly. The ordinary diet is scanty, and consists chiefly of salted and fresh fish, with vegetable matters.

The disease, however, very often occurs among the rich, surrounded by and enjoying every comfort, and living in the healthiest situations; but I never saw a case of "joint evil" in that class of persons; and when this occurs in the poorer class it is most frequently found in the colder and damper districts. *Dr. Young.*

The general opinion here is, that it is seen more on the coast than in the interior, and chiefly among the lower and poor classes. *Dr. Browne.*

It is more common among the lower orders. *a.* It is met with in every locality in the island. I think, however, that the greater number of cases will be found on the seacoast and in the towns. *b.* The dwellings of the lower classes are generally low and hot. *c.* Their habits are not cleanly. *d.* Their food is wholesome, but coarse. I cannot say, however, that I have observed any of the above-mentioned states sensibly to favour its development. *Dr. Stevenson.*

7. Intemperance in diet, and the free use of ardent spirits. *Dr. Carrington.*

Want of proper nourishment, and exposure to the vicissitudes of climate. *Mr. Rogers.*

It is doubtless accelerated and aggravated by whatever tends to lower the vital powers. When it appears in one who has the ordinary necessaries and comforts of life, it may not only be protracted for many years, but he may even be able to exercise some useful employment. *Dr. Clarke.*

Probably poverty, and a want of cleanliness and wholesome food. *Dr. Goding.*

Poor diet, intemperance, bad clothing, crowded habitations, and a want of cleanliness. *Dr. Young.*

A rich heating diet, or a want of sufficient quantity of good wholesome food, will alike aggravate the disease, as will also exposure to the sun; but chief among the sources of aggravation are dissipation and debauchery. *Dr. Stevenson.*

Want of good diet and of medical and other care. *Dr. Browne.*

8. Without doubt, it is hereditary. I have known many instances in which it attacked one member of a family, whilst all the others escaped. I have also known it to pass over one or more generations, and to appear in the second or third degree. *Dr. Carrington.*

It is often hereditary. I know two instances where one member only of each family was affected, while all the other members remained free from any trace of the disease.

I know an instance of three children, the offspring of a leprous father, becoming, each of them, affected with the disease at seven or eight years of age. The malady was apparently latent in the mother. *Mr. Rogers.*

It should be classed among the purely hereditary diseases; nor is this disproved by the fact of one member only of a family being affected, while all the other members remain free from any trace of it, instances of which may be adduced. *Dr. Clarke.*

Always, in my opinion. *Mr. Moore.*

I believe the disease partakes of an hereditary character. I have known instances of one member of a large family being affected, while all the rest remained free. *Dr. Goding.*

Leprosy and joint evil are both hereditary. I have seen only one case of leprosy where this could not be traced out. I have known several instances where only one member of the family has suffered; indeed I do not recollect ever to have seen more than one of the same family affected. *Dr. Young.*

It does appear to be hereditary, but I cannot say often so. There are many in the lazaret who have father and mother free from the disease; and I know a white person in middle life, a mother of a numerous family, affected with the anæsthetic form of the disease, in whom it manifested itself at the cessation of child-bearing, whose entire family remains free, and whose father and mother were not affected. *Dr. Browne.*

There can be no doubt of its being hereditary. Frequently, however, one member will be attacked and the others escape; but very commonly the offspring of those members who escaped will be attacked with it in its worst form. *Dr. Stevenson.*

9. I have not. *Dr. Carrington.*

In my opinion, leprosy is a distinct disease. *Mr. Rogers.*

I believe leprosy to be a disease *sui generis*, differing from all others in its character, progress, duration, and in the inefficacy, above all, of any medical treatment in effecting a cure. *Dr. Clarke.*

I have no reason to believe so. *Mr. Moore.*

I believe it is a disease *sui generis*. The yaws, once so prevalent in the West Indies, are fast disappearing from Barbadoes. *Dr. Goding.*

I have not. *Dr. Young.*

I have not. *Dr. Browne.*

I will not say that syphilis can produce *true* leprosy, but that it can produce a disease so closely resembling it as to deceive the most careful observer I fully believe. It is most common in the offspring of syphilitic patients. There are, however, one or two signs by which syphilitic leprosy (if I may use the term) may be distinguished from true leprosy, viz., the spots are generally more copper coloured and scattered over the whole body; swelling of the tonsils and uvula is more constant; the shafts of the long bones commonly nodulated; pains in the joints, with thickening round the heads of the bones. If not capable of cure, it can be much ameliorated by regimen and medical treatment; whereas true leprosy runs its course in defiance of all treatment. *Dr. Stevenson.*

10. No. I have known a leper to remain in the same dwelling, and have free communication with the other inmates, without any other being attacked. It is not, I think, transmissible by sexual intercourse. *Dr. Carrington.*

I know of two instances where the disease was communicated to two healthy young men by proximity (and perhaps direct contact). In both cases there were ulcerations with a discharge. The young men ultimately suffered from the same form of the disease. *Mr. Rogers.*

I believe it cannot be communicated by direct contact, and is therefore not contagious.

I have known instances of man and wife living together for years, the one a leper and the other sound, without the disease being communicated by contact or sexual intercourse. In one case the disease early appeared in some of the children, while the others remained apparently healthy. *Dr. Clarke.*

I have not met with any instances, nor do I believe it to be contagious. *Mr. Moore.*

I cannot speak decidedly to this point. In two instances, contagion appeared to be the influencing cause. In one instance of two sisters (one leprous) living together, and avoiding all intercourse with other people, the second sister, who had for many years waited upon her leprous sister, eventually became affected. No medical man being permitted to see the first sufferer, no information was obtained as to the manner in which the supposed contagion was communicated.

No instance of the communication of the disease by sexual intercourse has come to my knowledge. *Dr. Goding.*

I have never seen a case either of leprosy or of joint evil propagated by contagion or infection; nor do I believe that they are transmitted by sexual intercourse, or by any other way than by hereditary taint. *Dr. Young.*

I have not met with any cases of contagion. None of those in attendance, during the last nine years, upon the inmates of the lazaretto have contracted the disease; and I, after receiving a wound from a knife, moistened with the fluids of an inmate, have escaped, although the wound was followed by great constitutional irritation and loss of the finger. From what I have heard, I do not believe it communicable by sexual intercourse. *Dr. Browne.*

I do not think it infectious, but I think it may be communicated by direct contact.

a. In the latter stage, when there are ulcerations with an unhealthy discharge.

b. One was that of an individual who occasionally slept in a bed soiled with the discharge from a leper; the other was in a servant who dressed the ulcers of a leprous patient; both became leprous, although not related to the patients, nor was there any hereditary taint.

c. I am not aware of any case that could be directly ascribed to such a source of transmission. *Dr. Stevenson.*

11. In some instances, free communication is permitted. By a recent enactment, a lazaretto has been erected for such persons as shall avail themselves of the institution, and for vagrant lepers. *Dr. Carrington.*

The lower orders are received and supported in the public lazaret; the higher prefer living a secluded life in their own dwellings. *Mr. Rogers.*

Lepers may and do communicate freely with the rest of the community, without restriction or legal segregation. *Dr. Clarke.*

Communication with the rest of the community is permitted. *Mr. Moore.*

Among the independent classes, they sedulously exclude themselves from society. All from the highest to the lowest have such a dread of the disease being known in their families that they keep them out of sight as much as possible. The destitute are sent to the lazaretto, or go about begging. In times of slavery they were never seen begging, but were kept by their masters in cottages set apart for them on the plantation. *Dr. Young.*

Lepers are not prevented free intercourse with other persons, and are only liable to be sent to the lazaret by magistrates' order upon proof of their begging in the streets. Five only have been thus committed, during nine years, out of 73 admissions. *Dr. Browne.*

Lepers go at large in the island, but are avoided as much as possible. *Dr. Stevenson.*

12. There is a public lazaret for the leprous poor, but they are not strictly excluded from the general hospital. *Mr. Rogers.*

All leprous persons found vagrant in the streets may be sent to the lazaret by a magistrate's order. There could be no difficulty in their obtaining admission to the general hospital, if labouring under other diseases. *Dr. Clarke.*

The lazaretto was established in 1853. It is situated about half a mile from the shore, at a distance of three miles from the town; a stone wall structure, divided into six rooms, 18 feet by 15, which open into a gallery with jalousies extending the whole frontage. Three of the rooms are appropriated to males, and three to females. A stone wall privy, and two strong refractory cells of wood on each side, conclude the accommodation for inmates. There is a tank for rain water, and a well about 70 feet deep. The roof is shingled; the floors of the rooms and gallery are of pine, and painted. The walls within are painted to four feet high; the remainder being plastered and white. There is an open gallery, about five feet broad, extending along the whole back of the building. The staff consists of two female nurses, one male attendant, and two cooks. A physician is appointed to give medical care. The dietary is as follows:—

Breakfast, 7 ozs. of rice, or 7 oz. of corn-meal, or 1½ lbs. of sweet potatoe or other roots (eddoes, yams), with 2 ozs. of salt-fish. A gill of molasses with 3 ozs. of milk for tea *four times weekly.*

12 ozs. of bread and 2 ozs. of salt-fish, with a pint of chocolate or coffee containing 1½ ozs. of sugar and three ozs. of milk, *three times weekly.*

Dinner, 8 ozs. (with bone) of fresh meat, and 8 ozs. of bread, or 1 lb. of potatoes or roots, *three times weekly.* One pint of grain soup containing a gill of dry grains (either pigeon peas, english peas, or black eyes), and 3 ozs. of salt pork, with 1½ lb. of potatoes or roots, *four times weekly.*

Supper, one oz. of sugar and 3 ozs. of milk in tea.

The above quantities for an adult, ¾ for those under 16, and one-half for those under 10 years. *Dr. Browne.*

13. The number at present maintained by the public in the lazaretto is 46. *Dr. Browne.*

14. I think there are fewer cases of leprosy now than there were 15 or 20 years ago. I should certainly consider that the improved condition of the peasantry in domestic comforts since emancipation has mainly contributed to this end. *Dr. Carrington.*

I do not think the disease is on the increase or otherwise. *Mr. Rogers.*

There are no statistics to guide me, but my belief is that it has not increased of late years; and though more lepers may be seen about the streets than formerly, these would seem to be attracted there by the greater chance of obtaining alms, most of them being poor and unfit for labour. *Dr. Clarke.*

I have no reason to believe that it is on the increase. *Mr. Moore.*

It has, I think, rather increased of late years, from observing more of it than I formerly did. I can attribute this to no other cause than the greater facilities of inter-communication of the emancipated people, both between themselves and the neighbouring colonies. *Dr. Goding.*

I do not believe that leprosy has been on the increase in Barbadoes during the last 15 or 20 years. As to its diminution I cannot speak confidently. *Dr. Young.*

I do not know whether it has or not; but it has been brought more under public notice since emancipation in 1838. *Dr. Browne.*

I think that it has increased of late years, but I cannot ascribe this to any particular course. *Dr. Stevenson.*

15. I have never known a spontaneous cure, nor have I seen decided benefit from any medicinal treatment. *Dr. Carrington.*

In my opinion leprosy is incurable. I have never seen a cure, spontaneous or otherwise. *Mr. Rogers.*

I believe it is an incurable disease. I know of no case of spontaneous cure. Good hygienic and dietetic treatment may probably prolong life. *Dr. Clarke.*

I have not seen any satisfactory results from any treatment. I do not believe that it ever undergoes a cure, spontaneous or otherwise. *Mr. Moore.*

The results of treatment have been very unfavourable, and the general opinion in Barbadoes is that leprosy, once fully developed, is incurable. *Dr. Goding.*

I have experienced very few beneficial results from treatment of the disease (leprosy). It never undergoes a spontaneous cure; indeed it never fails to prove fatal when once it is confirmed. Life may be prolonged by strict attention to all hygienic rules for maintaining the general health, if adopted in the early stage of the disease, and by the use of some alterative medicines, as of the acetate of potash, the iodide of arsenic, and sarsaparilla. The petroleum Barbadense has occasionally seemed to do good; it is a popular remedy among the lower classes, and is used both internally and externally. For external applications, iodine and some of its compounds are used.

A course of treatment as the above,—hygienic, dietetic, and medicinal,—will arrest "joint evil," prevent some of the worst symptoms, and greatly prolong life. *Dr. Young.*

None of the leprous poor in the lazaretto have recovered, wholly or partially, during the nine years I have had charge of it; nor have I ever heard of a spontaneous cure of the disease. *Dr. Browne.*

I never saw a spontaneous cure of true leprosy. It can, however, be modified by hygienic regime and medical treatment, at least in its very earliest stages. When it is fully developed, all treatment seems useless. *Dr. Stevenson.*

16. The estimated population at the Census of 1861 was, males 70,799, and females 81,928, making a total of 152,727, and composed of 16,594 whites, 36,138 coloured, and 100,005 blacks, equal to a total increase of 16,788, notwithstanding the large number, about 20,000, taken off by the cholera in 1854. *Dr. Carrington.*

There is a registration of births and deaths, but no register as to the causes of death. *Mr. Rogers.*

It is much to be regretted that there is no registration of births and deaths, and no means of ascertaining the causes of death. There is no doubt that a proper registration return, annually published, showing the causes of death, &c., would show this colony to be one of the most healthy under the sun. *Dr. Clarke.*

There is a monthly return by all the ministers of the Established Church of the baptisms, marriages, and burials in their respective parishes. *Dr. Browne.*

There is no registration of the causes of deaths. It is much to be desired, as numbers die without any medical treatment; and, from the want of registration of the causes of death, the clergymen have no alternative but to bury them when requested, without further inquiry. *Dr. Stevenson.*

17. Besides the general improvement in the food and sanitary condition of the dwellings of the poor, the only means, in my opinion, likely to prove preventive of the disease is the establishment of lazarettos for the reception of the afflicted. These, while affording relief to them from the sufferings of poverty, might induce them to end their days there, and, through a proper separation of the sexes, provide for the non-extension of the disease by hereditary transmission.

I have not made any post-mortem examinations of persons dying of the disease. *Dr. Browne.*

I think that the sanitary condition of the labouring classes requires attention. If the lepers were made to remain in the lazaretto, the continual sexual intercourse between the healthy and the diseased would be avoided, and thereby a contaminated offspring be prevented. *Dr. Stevenson.*

No. 14.

GRENADA.

1. It is known, but not common.

It shows itself by red irregular patches on the face, extremities, or the body; by more or less distortion of the features; the nose becomes flattened, partly by the absorption of the cartilages, and partly by the swelling of the surrounding parts, where tubercles form in the cellular tissue; from the same cause the eyes appear sunk in the orbits; the voice becomes hoarse; the ears are tuberculated; the extremities become deformed; the fingers and toes are contracted, ulcerate, phalanges or whole fingers drop off; other ulcerations form about

the hands, arms, feet, or legs, but not often on the body. From the beginning there is generally diminished feeling in the affected parts, and sometimes of the taste and smell. The general health remains pretty good, and patients may live may years if well provided for.

The form now described is the "tubercular leprosy." There is another form, of a milder character, which may be called "simple leprosy." The features are much less deformed. The red patches are generally present, with diminution or abolition of feeling in the parts affected. The deformity of the hands and feet is much less considerable; ulcerations, if they exist, are less deep, and the dropping off of the phalanges is not so common.

The two forms are, I believe, varieties of the same disease. *Dr. Aquart.*

During a residence of five years, I have seen but one case, and that was of the "lepra nigricans." It occured in small scaly dark livid patches, first about the legs and arms; the scales peel off readily, leaving an excoriated surface, discharging a thick bloody looking fluid. *Dr. Orgias.*

The cases I have seen are but three, and they were all of the "lepra tuberculosa," and in an advanced stage of the disease, with enlargement of all the joints, ulceration, and dropping off of the toes; a thickened, elevated, and greasy shining appearance of the skin. In two of the cases, the prominences were white, and in the other of a dusky livid hue. The general health was debilitated; there was emaciation, and a peculiar loathsome and ghastly appearance characteristic of the disease. *Dr. M'Intyre.*

2. I have never seen leprosy in children. The earliest age was about 14 years; I would say between 14 or 15 and 40; but in youth principally.

The earliest symptoms are the alteration of the features and the red patches. *Dr. Aquart.*

In two of the three cases, the disease appeared about 10 years of age; they were males. The other case was in a female, about 15 years old. In each of the cases I was informed that, after a smart attack of intermittent fever, thickened and slightly discoloured patches appeared on the skin of the face and on the joints, especially of the hand. This was soon followed by enlargement of the joints, unaccompanied with pain. After this, the disease took its usual course. *Dr. M'Intyre.*

3. At whatever age the disease begins, it comparatively shows more active progress as the subject is younger.

I have never heard of it proving fatal. The sufferers have generally been cut off by some acute attack supervening on a weakened constitution. *Dr. Aquart.*

In the three cases under my observation, the disease attained its maximum in three years. One of the males died after being affected seven years. The other is now in a lingering state from dysentery, and has been affected nine years. The third patient, a female, has been affected six years, and is now in middling health. *Dr. M'Intyre.*

4. It affects both sexes equally. *Dr. Aquart.*

5. I have seen more coloured persons affected with it than black. I have seen only one white person affected. *Dr. Aquart.*

My three cases may be thus set down:—

Two males, brothers, octeroons.

One female, a relation of the above, quadroon. *Dr. M'Intyre.*

6. I have not sufficient data to answer this question.

In all the situations above mentioned I have observed some cases. I have seen the disease in comfortable and healthy dwellings as well as in dens. Cases have occurred in persons with good and cleanly habits; but they are certainly more common when the reverse is the case. A bad diet and improper habits will render the constitution more liable. *Dr. Aquart.*

My three patients lived in a healthy, inland, hilly situation, in comfortable wooden houses. They lived principally on a vegetable and fish diet, and were on the whole in comfortable circumstances. *Dr. M'Intyre.*

7. In the lower and indigent class, with everything dirty around, I have certainly seen the disease make more rapid progress. *Dr. Aquart.*

8. I have seen two cases where the disease was certainly due to heredity; but I have known also many healthy offsprings from a mother or father affected with it, who never presented any symptoms of the malady in after life. *Dr. Aquart.*

Distinctly so, in my cases.

The female patient is the only one affected of a family of five. *Dr. M'Intyre.*

9. No. I can trace no affinity. *Dr. Aquart.*

No. I believe it to be a disease *sui generis*. *Dr. M'Intyre.*

10. I have seen a few persons amongst those affected where contagion appeared evident.

b. A young girl about 12 or 14 years of age slept in the same bed with a young woman who had symptoms of leprosy. Within 12 months the girl presented the red patches, and seven or eight years afterwards she was a confirmed leper. The mother of this girl contracted the disease, but the father escaped.

I have seen another case perfectly similar, but other members of the family remained exempt.

It is right to add, that I know families where one who was leprous continued to live without any restriction in the house, without any other inmate becoming affected. In these instances, however, the disease was usually of the second form described in question No. 1.

I do not think the disease in its incipient stage transmissible by sexual intercourse.

N.B.—I consider that contagion will take place when ulcerations exist with copious discharge, and this can only occur in the first or tuberculous leprosy.

Dr. Aquart.

I have met with no such instances. *Dr. M'Intyre.*

11. No restriction is imposed; leprous persons may communicate freely with the rest of the community. *Dr. Aquart.*

12. No public provision is made. I would not admit any case of leprosy into the colonial hospital, except under very aggravated circumstances. *Dr. Aquart.*

No special provision is made. There is a poorhouse and a colonial hospital to which they may be admitted, according to the rules of those institutions. *Dr. M'Intyre.*

13. None are treated at the public expense. *Dr. Aquart.*

14. I do not believe that the disease has been on the increase. *Dr. Aquart.*

From what information I can gather, I am led to understand that leprosy is on the decrease. *Dr. M'Intyre.*

15. No satisfactory results. *Dr. M'Intyre.*

16. There is no general registration of births and deaths. *Dr. Aquart.*

The population was 31,990 by the Census taken on 8th April 1861. *Dr. M'Intyre.*

17. No information.

No. 15.

TOBAGO.

1. It is known, but not to any great extent. During the last four years I have known only two cases arise, in neither of which could any hereditary taint be traced, both negroes of 12 or 13 years of age. In both cases the parents are apparently healthy and deny any family taint. *Dr. Buhót.*

The disease is seen especially in a deformed and mutilated state of the hands and feet.

Mr. Purser.

It occurs generally in the shape of large bluish tuberculated swellings about the face, joints, and extremities, which ultimately break out into ulcerations. There are two different forms, viz.: 1. The yellow or spotted leprosy, and 2. The running leprosy. They are varieties of one morbid state, and not specifically distinct diseases. The first form appears in pale yellow blotches on the face and body generally, and usually attended with a cachectic state. The second form appears in pale blueish running ulcers on various parts of the body. When the hand is attacked, some, perhaps the whole, of the fingers drop off; the same takes place with the feet and toes. *Dr. Elliott.*

2. At the age of ten and upwards. I have known a case in a negro of eight years of age. The earliest symptoms were a puffiness and shining appearance of the ears, lower lobes particularly, and a lightened tint of skin; the alæ nasi were puffy, with a slight incrustation within the nares. The forehead became swollen, the eyelids puffy, and subsequently the finger joints became knobby and scaly, but as yet without ulceration. *Dr. Buhót.*

It seldom appears before six years of age. The earliest symptoms are a peculiar glistening appearance of the ears, somewhat scaly, with tuberculated hard swellings; at length these nodulated tubercles affect the cheek and neck, and the nose, which ulcerates, with exfoliation of the bones. The extremities and joints ultimately become attacked. *Dr. Elliott.*

3. The period of development is uncertain. I have known a case occur in a white man nearly 60, and terminate in death in about three years. *Dr. Buhót.*

It does not generally prove fatal until the patient is advanced in years, unless there be neglect and a want of the necessaries of life. *Dr. Elliott.*

4. I have seen a much greater number in males than in females. *Dr. Buhót.*
I think I have seen more cases in males. *Mr. Purser.*

5. I think it is more frequent in the black, next in the coloured, and then in the white man. *Dr. Buhót.*
It is most frequent in the black population. *Mr. Purser.*
It is most common among the blacks, and next amongst the coloured. *Dr. Elliott.*

6. I know of no condition which either favours its development or otherwise. We see more of it in the lowest grades than in the upper, simply because, when a case occurs in the latter, the sufferer would be strictly secluded from all but the nearest relatives, the taint of blood carrying an opprobrium with it.
a. The favourite localities are near the sea coast.
b. seems to have no influence on it. *Dr. Buhót.*
Most frequent among the poorer classes. I have not observed that one situation more than another has to do with the disease. *Mr. Purser.*
Most frequent among the lower classes. *Dr. Elliott.*

7. I have seen it occur in respectable life and in other grades down to the lowest. I know of no circumstances which either accelerate or aggravate it. *Dr. Buhót.*
Poverty, destitution, and undue exposure to the inclemencies of the weather. *Dr. Elliott.*

8. Yes. In many instances I have been able to trace it. *Dr. Buhót.*
I regard it as hereditary. I have known instances where the other members of the family remained free from it. *Mr. Purser.*
In the majority of cases it depends chiefly on hereditary disposition. *Dr. Elliott.*

9. No. *Dr. Buhót.*
Yes. I look upon leprosy, syphilis, and yaws as cognate. *Mr. Purser.*
Leprosy is a distinct disease, sui generis. *Dr. Elliott.*

10. Uncertain. *Dr. Buhót.*
I think the disease not contagious, nor transmissible by sexual intercourse. *Mr. Purser.*
I have not seen, but have heard, and I am disposed to believe it, that leprosy is contagious. *Dr. Elliott.*

11. There are no restrictions of any sort. *Dr. Buhót.*
No restrictions. *Mr. Purser.*
No restrictions. *Dr. Elliott.*

12. None. *Dr. Buhót.*
None. *Mr. Purser.*
A few years back an asylum was provided at the public cost, but it was found difficult to maintain any discipline among the inmates, and it was discontinued. *Dr. Elliott.*

13. None. *Dr. Buhot.*
None. *Mr. Purser.*
There is but one in my district. *Dr. Elliott.*

14. I have no reason to believe that it is on the increase. *Dr. Buhót.*
I have no reason to believe that it is on the increase. *Mr. Purser.*
It has not been on the increase, but positively on the decrease; and this has no doubt been mainly dependent on the circumstance of the lower orders being better housed, fed, and clad, and their comparative immunity from depressing mental causes. *Dr. Elliott.*

15. I have observed no favourable results from medicinal treatment. *Dr. Buhót.*
I have observed no favourable results from medicinal treatment. *Mr. Purser.*

16. Population in April 1861 was 15,410. There is no registration. *Dr. Buhót.*
There is no registration. *Mr. Purser.*
There is no such registration. A measure of this kind would be of great public utility. *Dr. Elliott.*

The more the diet of the people is improved, and the more purity of life prevails, the less will be, I think, the amount of the disease. *Mr. Purser.*

No. 16.

TRINIDAD.

1. In 1847 I visited, in company with the Governor, Lord Harris, the leper hospital at Trinidad. It contained 47 patients under the care of a physician. The majority of the cases were of the tubercular kind. Some laboured under the 'joint fever,' the name applied when there was loss of fingers or toes from ulceration, with febrile paroxysms. There were amongst the inmates two or three cases of elephantiasis or Barbadoes leg.

Dr. J. Davy, F.R.S., Inspector General of Army Hospitals, &c.

Has been known for many years. There are two forms of the tubercular leprosy, the sthenic and the asthenic, according to the constitution of the affected; the former occurring in the strong, plethoric, and intemperate; and the latter in the poor, ill-fed, and badly housed. They are only varieties of one morbid state.

Dr. Saturnin, Medical Superintendent of the Leper Asylum.

It occurs chiefly as tubercular leprosy; there is also an anæsthetic form. For some time I viewed these forms of disease as representing two varieties of leprosy; but, with closer attention to five cases of the latter form in the poorhouse under my charge, I am satisfied that it is an intense variety of scrofula, and a distinct malady from real leprosy. These five cases have now continued for years in the same condition without showing any tendency to tubercular disease.

Tubercular leprosy commences with a change of colour on patches of the skin, generally of a darker hue than the surrounding integuments, and of a shining appearance. The spots continue for some time, exciting the uneasiness of patients and parents, and are succeeded by tubercles, generally cutaneous, sometimes deeper seated. The tubercles are small, soft, round, and livid, varying in size from a pea to an olive, and are seen chiefly on the face, particularly covering the nose, ears, and forehead. They spread in time over the whole body, and finally ulcerate, the face presenting the frightful deformity described in books.

The anæsthetic disease is characterized by the loss of the fingers or toes by ulcerative absorption and loss of sensibility. It rarely extends beyond the extremities, though I have occasionally noticed patches of discolouration of the skin over the body. *Dr. Murray.*

The common character of leprosy in the white or coloured person appears in dark brown patches on the face, ears, body, and extremities; those on the ear may be taken as peculiar to it; they are at first merely superficial, but become gradually thicker and darker, and terminate in ulceration. In one form the hands and feet, especially the small joints, are the parts particularly affected. The different forms are varieties of one morbid state. Elephantiasis, in my opinion, is not a form of leprosy. *Dr. Anderson.*

2. It manifests itself at all ages, even in infancy. A medical friend recently saw a case of tuberculous leprosy in a male child at birth.

The earliest symptoms are circumscribed blotches in different parts of the body, the same differing in colour according to the hue of the skin of the individual.

The insensibility of the parts where these blotches exist,—a dryness and roughness of the surface of the skin, which is perfectly devoid of feeling at the end of the second month or later,—numbness in the hands and feet, attended with insensibility, which is sometimes so great that serious injuries from fire or otherwise will be borne without complaint.

Dr. Saturnin.

It appears generally from 7 to 12 years of age; the earliest symptoms are the discolourations of the skin. *Dr. Murray.*

At all ages, from childhood to advanced life. *Dr. Anderson.*

3. It usually attains its full development from one to five or six years of age, and sometimes later; this depending on the state of the patient. The time at which it may be fatal depends very much on the time of its invasion, and also on the state of the system.

Dr. Saturnin.

Generally not till adult age, though sometimes in inveterate cases more rapidly. Patients are generally carried off by diarrhœa, or by extension of the disease into the air passages, between the ages of 40 and 55. *Dr. Murray.*

In youth, and within a few years. It usually, but not always, proves fatal before the period of puberty, when early developed. *Dr. Anderson.*

4. Much more frequent in males. During my 16 years' attendance at the leper asylum, there has always been an excess of male patients. *Dr. Saturnin.*

At the leper asylum there are more males than females; but in my experience females have come more frequently under my notice than males. *Dr. Murray.*

According to my experience, it is not more frequent in one sex than in the other.
Dr. Anderson.

5. Much more frequent among the blacks, less so among the coloured, and still less among the whites. I have seen the disease in one Italian, in two Germans, one Pole, one Irishman, and one Scotchman, but never in an Englishman. *Dr. Saturnin.*

It is more frequent amongst the coloured races, after that amongst the black, and least so in white people. *Dr. Murray.*

It is not. . . As a general observation, true leprosy is indigenous to certain latitudes, and attacks here principally natives of all denominations, black, white, and of mixed races; and although European residents are in a great measure exempt, instances occur among them when acclimatised, and their blood is impoverished by long residence. *Dr. Anderson.*

6. Among the indigent. It is necessary, however, to say that it is difficult to trace the number of cases among the upper classes, as families will seldom apply for medical advice through a sense of shame. The circumstances which favour its development are:—

a. Low marshy districts, exposed to malaria, both in town and country.

b. Badly ventilated habitations. The higher classes, residing in comfortable houses, are less subject to it.

c. Neglect of personal cleanliness.

d. Deficient and innutritious food. The poor live much on tainted fish, and vegetables such as plantains, yams, &c. *Dr Saturnin.*

a. It is observed chiefly in towns and on the sea coast in low and moist situations.

b. The dwellings are low and overcrowded, and the yards are kept in a most filthy state.

c. Extreme want of cleanliness, and habits of idleness and vagrancy prevail.

d. The diet of such persons is poor and unwholesome; in a great part consisting of unripe fruits. *Dr. Murray.*

The disease occurs in both rich and poor.

a. It does not seem to be affected by locality.

b. I have not observed any peculiar effect from such cause.

c. Cleanliness may act as a preventive or mitigator.

d. The use of pork may produce a proclivity to it. *Dr. Anderson.*

7. The almost entire use of salted meat and fish, and the abuse of spirituous liquors, as is the case in country districts, where fresh meat is seldom to be found; also the insufficient supply of food. *Dr. Saturnin.*

Uncleanliness, overcrowding, bad and insufficient food, and general poverty and distress; in a word, everything tending to depress the vital powers. *Dr. Murray.*

Irregularities and intemperance; also want and destitution. *Dr. Anderson.*

8. It is most decidedly hereditary; yet sometimes one member only of a family may be attacked; at other times one of the parents may have been attacked with it, anterior to its appearing in the children, or vice versâ. *Dr. Saturnin.*

The disease is certainly hereditary, although many offsprings of infected parents escape altogether.

I have seen instances of other members of a family escaping the disease, even when the one affected has been brought up indiscriminately with them. *Dr. Murray.*

It does.

I have seen such instances. *Dr. Anderson.*

9. It is quite independent and unconnected with syphilis, yaws, or other cutaneous diseases. It has frequently occurred that variola or scabies may supervene, arrest the leprosy during their existence, and, after the disappearance of these diseases, the leprosy will reappear.
Dr. Saturnin.

I think these are perfectly distinct diseases. At the same time, such diseases become worse in persons who may from parentage be supposed to be predisposed to leprosy.
Dr. Murray.

I have not; but syphilis and yaws may co-exist with it. *Dr. Anderson.*

10. I have never met with a single instance of it appearing to be so. Ulcers with ichorous discharge are dressed several times a day by the surgery man, who has been employed for 12 years at the leper asylum. The washerwoman, who has been there for 16 years, and handles the clothes of the lepers, and the medical superintendent, delivering women in labour, amputating limbs, and performing other surgical operations, have escaped.

The disease has not been transmissible by sexual intercourse in many cases which have been under my care, and which most decidedly confirm my opinion that it is not contagious.
Dr. Saturnin.

I have not met with any instance of it actually arising from direct contagion; neither can I say that it is ever transmitted through sexual intercourse. *Dr. Murray.*

I have not. *Dr. Anderson.*

11. Leprous vagrants and beggars, found in the public streets and highways, are arrested by the police, and conveyed to the leper asylum. There are no restrictions imposed in regard of those who can maintain themselves. *Dr. Saturnin.*

Those only are admitted into the leper asylum who either apply voluntarily or who are summoned before a magistrate for being at large in the public thoroughfares. Many lepers are, nevertheless, to be seen in the streets of Port of Spain. Certainly this should not be so, and requires, in my opinion, a more stringent remedy (vide Appendix). *Dr. Murray.*

12. An asylum was provided in 1843, at Cocorite, about three and a half miles from Port of Spain, for the reception of indigent lepers. Prior to that time they were located on a hill at a short distance from the town, where no segregation was enforced, and the lepers were supported in part by private charity, and no regular medical attendance was provided. Some years ago the locality of the present asylum was very unhealthy; but since hygienic measures have been strictly enforced, the asylum has become comparatively more healthy. There are attached to the establishment bath-rooms, and, the building being near the sea, there is every facility for sea bathing also. *Dr. Saturnin.*

Lepers are not admitted into the general hospitals of the colony. *Dr. Murray.*

13. At present the number maintained at the public expense is 55. As before mentioned, it is difficult to obtain data relative to the disease in general. *Dr. Saturnin.*

RETURN of the Medical Superintendent of the Leper Asylum at Cocorite, showing the number of Paupers admitted, discharged, deserted, and dead from that establishment during the year 1861, from 1st January to 31st December.

——	Admitted.	Discharged.	Deserted.	Dead.	Remaining.
January -	2	—	—	—	50
February -	1	—	—	1	50
March -	—	—	—	—	50
April -	1	—	—	1	50
May - -	2	—	—	2	50
June - -	—	—	—	2	48
July - -	2	1	—	—	49
August -	2	—	—	1	50
September -	2	—	—	3	49
October -	2	—	—	1	50
November -	—	—	—	1	49
December -	1	—	—	1	49
Total -	15	1	—	13	49

14. I have reason to think that it has decreased during the last 12 years, as the number of patients then in the asylum was 60 and more, whereas from that date it has diminished by 8 or 10 per cent. *Dr. Saturnin.*

It has certainly appeared to me to be on the increase in this colony during the last 20 years; but unless it be the coarse hand-to-mouth mode of living, and the careless unprincipled way in which young members of poor families are brought up, I cannot say what has contributed to its increase. *Dr. Murray.*

I do not believe that it is on the increase, nor that it has diminished. An inquiry was instituted on this subject by Governor Sir Ralph Woodford, confirmatory of this fact. *Dr. Anderson.*

15. Patients have been, and are constantly, brought into the asylum in an irremediable stage of the disease. Occasionally patients, whom I considered were progressing favourably, have absconded from the asylum, and I have been thus prevented from following out the cases. Many cases have been ameliorated. I can cite 4 instances of complete recovery where the disease was in its first stage, that of circumscribed, shining, or shrivelled patches of a lighter colour on the surface, with insensibility. I have never known a spontaneous cure at any stage. *Dr. Saturnin.*

I have never witnessed any successful results from treatment. *Dr. Murray.*

During 40 years' extensive practice in this colony I have observed great benefit, and even cures, derived from treatment and regimen, when resorted to in the early stage of the malady I have never seen a spontaneous cure. *Dr. Anderson.*

16. By the Census on April 7th, 1861, the population was 84,438.

The following TABLE shows the component parts of the Population of Trinidad by the Census Returns of 1851, 1861, and the comparative increase and decrease.

Where born.	Census of 1851.	Census of 1861.	Increase in 10 Years.	Decrease.	Total Increase.
Trinidad - -	40,627	46,936	6,309	—	—
British Colonies -	10,812	11,716	904	—	—
Foreign - -	4,915	4,301	—	614	—
China - - -	—	461	461	—	—
India - -	4,169	13,488	9,319	—	—
Africa - - -	8,097	6,035	—	2,062	—
Not described -	260	461	201	—	—
Total - -	68,880	83,398	17,194	2,676	11,842

A uniform registration of births and deaths is kept at the office of the Registrar General, whose duties were established in 1847. The cause of death may be ascertained both at that office or from the keeper of the public cemetery. *Dr. Saturnin.*

Registry of Deaths in the Town of Port of Spain by Leprosy.

When dead.	Sex.		Age.	Rank and Occupation.	Cause of Death.
1861.					
1st February -	—	F.	60	Proprietress	Skin disease.
15th „ -	—	F.	15	None	Leprosy.
9th April -	—	F.	18	„	Leprosy.
10th May -	M.	—	24	„	Leprosy.
26th „ - -	M.	—	50	Labourer	Leprosy.
14th June -	M.	—	62	„	Leprosy.
21st „ - -	M.	—	24	„	Leprosy.
6th October -	M.	—	19	None	Leprosy.
11th November -	—	F.	21	„	Leprosy.
1st December -	M.	—	46	„	Leprosy.
19th September -	M.	—	42	Shopkeeper	Leprosy.
1862.					
15th January -	M.	—	29	None	Leprosy.
7th February -	—	F.	45	„	Skin disease.
23d „ -	M.	—	27	Labourer	Leprosy.
4th March -	M.	—	65	None	Joint evil. Pyœmia.
3d April -	M.	—	43	„	Skin disease.
3d May - -	—	F.	28	„	Leprosy.
13th „ - -	M.	—	26	„	Leprosy.
27th „ - -	—	F.	20	Seamstress	Leprosy.
5th August -	M.	—	30	None	Leprosy.
3d September -	M.	—	17	„	Leprosy.
7th October -	—	F.	20	„	Leprosy.
29th „ -	—	F.	18	„	Leprosy.
21st November -	M.	—	41	Labourer	Leprosy.

There is a general registry of births and deaths, which was established in 1847, and put in force in 1858. *Dr. Murray.*

17. I am not aware of any post-mortem examinations having ever been made. *Dr. Murray.*

No. 17.

BRITISH GUIANA.

1. There are two forms of leprosy seen here,—the one, tuberculous, affecting all parts of the body; the other, attacking the joints only. I have known them co-exist in the same person. I do not think the two forms belong altogether to the same morbid state, although they have some affinity. They are easily distinguished the one from the other. In the tuberculous form, the spots on the surfaces are at first, in a white or fair skin, of a yellowish or dirty white colour, and in a coloured or brown person, they are generally whiter than the surrounding skin. Gradually they assume a glossy appearance, and their colour turns to red in the white, and to yellow in the brown skin. In course of time, varying from six months to several years, the spots are somewhat raised above the surrounding parts, and seem thickened, and fresh spots appear on other parts of the body. The lobules of the ears and the alæ of the nose become thickened, and there is a perceptible swelling of the whole face, especially of the eyelids. The general health is, at this stage of the disease, but little, if at all, affected. Subsequently, when the spots have become more decidedly tuberculous, and the face is red, swollen, and indurated, loss of appetite, headaches, pains in the joints, frequent diarrhœa, and feverishness are not uncommon. When the tubercles ulcerate, the discharge is usually very offensive, and hideous sores are formed There is often permanent chronic ophthalmia. The progress of the disease may be very slow; the patient is generally cut off by colliquative diarrhœa, or by some sudden pulmonary attack.

In the *second* form of the disease, the joints of the toes and fingers become swollen, painful, and ulcerated; one phalanx drops off, and a cicatrix is formed: then the next one is attacked, and with the same result. Sometimes a portion of the hand or of the foot is lost in the same way. *Dr. Manget*, Colonial Surgeon General.

Yes. There are two forms, viz., the "joint evil," and the tubercular or elephantine leprosy.* They are only varieties of one common morbid state; not distinct diseases, but having a close affinity.

The *first* form begins with exacerbations of fever, and pains about the body for some weeks, and then the appearance of white or copper-coloured spots, sometimes on the face, but always on the limbs and body. They are slightly anæsthetic, and sometimes, after various intervals of time, fade, and become scarcely perceptible. In other cases, a dark red spot, in white and fair persons, often appears on either cheek; numbness of the fingers and toes then ensues, and the little and ring fingers begin to flex or contort. The first joint of the fingers and toes ulcerates underneath the nail, which either separates with the phalanx, or remains and assumes the shape of an imperfect claw. Gradually ulceration and mortification attack the different phalanges, which drop off joint after joint, while ulcers form on the legs, soles, and palms. In this form of leprosy the face and features remain natural, nor does the hair drop off or change its colour.

In the *second* form, the discoloured spots or patches appear always on the face, and on various parts of the body; they are usually copper coloured in the white, and yellowish brown in the black. These spots become tuberculous, and have a firm, dense, and glossy appearance. The skin over all the body becomes insensitive, dry, shrivelled, and thickened. The skin of the forehead is in large folds; the eyebrows and eyelids, deprived of hair and thickened, overhang the eyes, which are waterish, and often inflamed. The alæ nasi and the ears are swollen and scabrous, and the features altogether horribly disfigured. The tongue, uvula, and palate may become the seat of tubercles, and the voice rough, discordant, and very indistinct, doubtless from disease of the larynx. The fingers and toes tumefy about their joints, become numb, so that they are often burnt in cooking. In some cases, however, the fingers and toes ulcerate and drop off, joint after joint. The chief distinction between the two forms of the disease is that, while the face may remain unaffected throughout the course of the former, it is invariably swollen, tuberculous, and deformed in the latter.

Dr. Reed, Medical Officer of the General Leper Asylum.

It is very prevalent in British Guiana. The usual symptoms are the appearance of copper spots on various parts of the body, falling off of the hair from the eyebrows and lids, &c., chemosis and eversion of the tarsi, and great disfigurement of the face; subsequently, ulceration of the nares and palate ensues, and loss of the phalanges of the fingers and toes, &c. The disease is known in the colony under the name of "Cocubay." *Dr. Pollard*, Berbice.

Vulgo "leprosy with bumbs or cacobaæ" (an African name.)

I have known the disease in two forms—the joint and the tubercular. The two forms have a close affinity, one very often preceding the other. In the tubercular form, death is generally caused by dysentery or diarrhœa. *Dr. Duffey.*

It is known in British Guiana in the forms of the tubercular and of the joint leprosy. There are also squamous or scaly diseases, as *psoriasis lepriformis*, &c. They all belong, in my opinion, to one common morbid state. *Dr. Carney*, East Coast, Berbice.

Leprosy is known both in British and in Dutch Guiana.

It is characterised by the appearance of spots or blotches, circumscribed generally by high edges, and either of a lighter or darker colour than the surrounding skin; sometimes like bumps, as in *urticaria*, at other times in lines or stripes. These blotches increase in size and number, attended often with an aching of the body; at length, ulcers form, the fingers and toes drop off, and death ensues.

In Dutch Guiana, seven degrees of leprosy are recognized; but they are all considered varieties of one common morbid state. *Dr. Van Holst.*

2. I have seen the disease manifest itself at different ages, from 3 to 12 years. The earliest symptoms, according to my experience, are the appearance of a few discoloured spots on different parts of the body, sometimes not more than two or three, as large as half-a-crown, or smaller. *Dr. Manget.*

In the first form, or "joint evil," as early as seven years of age. The first phalanges of the fingers and toes become red and inflamed, contorted sideways (not flexed), and numb; ulcerations form under the nails, heel, and ball of the big toe; the skin is dry and discoloured.

In the second, or tuberculous form, about nine years of age. After the existence of feverish disturbance for some time, spots appear about the forehead and face; these enlarge into distinct tubercles. *Dr. Reed.*

It seldom displays itself before puberty; but I have seen well-developed leprosy at eight years of age. The copper-coloured spots are generally the first symptoms. *Dr. Pollard.*

I have seen it at all ages. *Dr. Duffey.*

It usually manifests itself from 30 to 40 years of age. Dark blotches appear on the face, arms, &c.; the fingers become contracted, and pains in the limbs, &c., are felt. Subsequently, ulceration sets in, and the phalanges of the fingers and toes drop off. *Dr. Carney.*

I have seen it at every period, from childhood to old age. The earliest observable symptoms are generally the external discoloured spots or blotches. *Dr. Van Holst.*

3. I have seen it attain its full development (by which I mean when the tubercles have ulcerated, the mucous membranes are affected, and there is diarrhœa and rapid loss of flesh) at different ages between 8 and 60 years. Within what time this development occurs after the commencement of the disease, and at what period of life it proves fatal, I cannot state. Occasionally it runs through its successive stages in a very short time; in other cases, it lasts for many years. *Dr. Manget.*

At whatever age the disease commences, it usually attains its full development in about ten years. After the age of from 20 to 25, it begins its depredations, and usually proves fatal between 40 and 50 years of age. The tuberculous form progresses more rapidly than the "joint evil." *Dr. Reed.*

It may invade and run its course, even fatally, between puberty and the next two or three years. I have known it prove fatal, within one year of its appearance, by ulceration; this was in a coloured man. Generally many years elapse before the disease is fully developed. *Dr. Pollard.*

In the tuberculous form, patients generally die at between 30 and 40 years of age. In the joint evil, patients will survive to 60 and upwards. *Dr. Duffey.*

There is great difference in different cases. Lepers sometimes live to an advanced age. The children of leprous parents, although the disease may not have manifested itself in them, are less amenable to medical treatment for other maladies than the children of healthy parents. *Dr. Carney.*

At any time of life; it varies according to the period when it commenced. The full development is in some cases much quicker than in others. *Dr. Van Holst.*

4. In the few cases I have watched, there were more males than females afflicted. *Dr. Manget.*

According to the number of lepers in the asylum, leprosy is more frequent in males. *Dr. Reed.*

Both sexes are, according to my observations, equally liable. *Dr. Pollard.*

It is more frequent in males than in females, in the proportion of two to one. *Dr. Duffey.*

According to my observation, the two sexes are pretty equally affected. *Dr. Carney.*

It prevails in both sexes; I do not think it is more frequent in one than in the other. *Dr. Van Holst.*

5. I believe it to be most frequent among the African race and its descendants, there being many more individuals of that than of any other race seen here afflicted with leprosy. *Dr. Manget.*

"Among the white - about 4 per cent.
„ coloured - „ 22 „
„ negroes - „ 67 „
„ coolies - „ 7 „

These figures are taken from the number of inmates in the asylum in 1862." *Dr. Reed.*

Instances have occurred, though rarely, among our white population, whose number is comparatively small. All the cases I have seen were among the coloured and black classes, and chiefly among the latter. *Dr. Pollard.*

In this colony it is most frequent amongst the negroes and the Portuguese immigrants. A great number of coloured people are affected with it; it is very rare among the whites. *Dr. Duffey.*

The coloured population are less subject than the black, and the East Indian coolies. Generally, European whites are exempt, unless the disease has been contracted by contact. *Dr. Carney.*

It is most frequent in the black, and next in the coloured population. *Dr. Van Holst.*

6. It is most frequent among the lower classes; but I am unable to give any information as to the circumstances which favour its development. The disease is probably accelerated in its development (irrespective of hereditary influence) by the several circumstances enumerated. The few cases which have come under my care belonged to the better classes. *Dr. Manget.*

The inhabitants of British Guiana mostly live on the sea coast, which is alluvial soil, low, damp, and malarial. The villages of the negroes and coloured people are undrained, and no attention whatever is paid to sanitary measures. In these villages leprosy prevails. In George Town, the capital of the colony, lepers are numerous; I attribute this to the facility of obtaining charitable relief. The mass of the population live on vegetables, as plantains, tanias, cassava, salt fish, and salt pork. The general occupation is agricultural. *Dr. Reed.*

Amongst the very lowest class, on account of their unclean way of living and debauched habits. *Dr. Duffey.*

Low, damp, and malarial localities seem to favour the disease; filth and bad diet certainly aid it. *Dr. Van Holst.*

7. Among the cases I have seen, it was clear that the comforts of life, coupled with hygienic regulations, arrested for a time, not seldom short, the march of the disease, without however ultimately preventing the fatal result. On the contrary, unwholesome and insufficient food, and ill-ventilated and crowded damp dwellings, together with dissipation of all kinds, evidently accelerate its progress. *Dr. Manget.*

Poverty of living, sloth, and damp unwholesome dwellings. *Dr. Reed.*

The poor and destitute die much sooner of the disease than those in easy circumstances. *Dr. Duffey.*

8. Sometimes, but not often.

I have known several remarkable instances of one member only of a family being affected, all the other members remaining free. *Dr. Manget.*

Yes.

Yes, but they are rare. If the family consists of several children, it is probable that two or more will be ultimately affected. *Dr. Reed.*

It is undoubtedly hereditary.

Sometimes all the children of diseased parents are affected, at other times one or two only, while the other members entirely escape. The disease often overleaps an entire generation to reappear in the next; the immunity may commence in the immediate family of the leper himself. It is possible that many cases presumed to be of hereditary origin are instances either of extraneous contamination, or of the propagation of the disease from one member of a particular family to the others. *Dr. Pollard.*

It is as hereditary as any disease I know of.

I have known instances where mothers have had the disease, and none of their children showed any appearance of it. *Dr. Duffey.*

It is hereditary in seven cases out of eight.

I have known several instances where one member only of a family has had the symptoms of the disease externally. *Dr. Carney.*

It appears to be often hereditary. *Dr. Van Holst.*

9. I have no reason to believe so. *Dr. Manget.*

Leprosy is a disease *sui generis*, independent of any other disease. *Dr. Reed.*

I believe it to be specifically distinct from any other disease. *Dr. Pollard.*

I think it mostly depends on a syphilitic taint or a strumous state of the blood. *Dr. Duffey.*

I have no reason to think so. *Dr. Carney.*

I firmly believe leprosy to be connected with syphilis, yea, even to be an offspring of it; imperfectly cured syphilis in parents causes the disease to break out in the progeny in the second, third, or fourth generations. *Dr. Van Holst.*

10. I have met with only two cases in which, after minute enquiry, I believe the disease to have been communicated by direct contact. My own opinion is in favour of the contagiousness of leprosy, and that it may be propagated by the matter of ulcerated tubercles being applied to any raw surface; but I admit that I have met with cases which would seem to preclude the idea that the disease can be considered contagious, in the ordinary sense of the term.

Of the two cases alluded to above, one occurred in an Englishman, æt. 35. After having cohabited for several years with a coloured woman, by whom he had a child, suspicious spots appeared on his face and body. He went to England where he remained two years, during which time the disease remained stationary. He returned to Demerara for some time; but in consequence of the progress of the malady, he again returned to England, where he died with all the characteristic symptoms of confirmed leprosy. The woman was not suspected of having any taint of the disease while living with her paramour, although it was afterwards discovered that there had been some spots on her body previously, and one of her sisters was decidedly leprous; eventually, she also became unmistakeably affected, and the child also, when about five years of age, exhibited signs of the disease.

The other case was also in a white man, H. R., æt. 25. He, it was believed, caught the disease by occasionally sleeping in the same bed, and making use of the same tobacco pipe with a Maltese youth who "had at the time leprous spots of which H. R. was not aware." After an acquaintance of about six months, ugly reddish spots appeared on his face and other parts of his body. The hands and feet began to swell, and soon afterwards, the nose and ears. Gradually the disease ran through its successive stages of tubercles, ulcerations, inflammation of the mucous membranes, &c., and he died in about 20 months after the first manifestation of the symptoms.

On the other hand, I have known instances where black women have cohabited for years with their husbands while labouring under confirmed and ulcerative leprosy, and have children by them, without manifesting the slightest trace of the disease. *Dr. Manget.*

Yes.

(*a.*) The leprosy was in the ulcerative stage.

(*b.*) "The first case was in a soldier, a white man born in England; he got the disease "when 55 years old, and died in the asylum, æt. 62. His case was one of the 'joint evil' "form. The second case was that of a negro boy, æt. 12; he was in the habit of associating "with a leper affected with the tuberculous form, and had ulcers."

(*c.*) I think so. *Dr. Reed.*

I am clearly of opinion that it is contagious in every stage and form, and especially so after ulceration. I have seen many instances which could only be referred to contagion; the convictions of the parties, and the most rigorous examination of the history of the cases giving no clue whatever to the pre-existence of any family taint. It is notorious in respect of a white family of distinction in this colony, that, having disregarded the warnings of their medical advisers of the danger of permitting the young members to play in company with a negro boy who exhibited the symptoms of the disease, they one and all became infected, and the majority of them fell victims to the fatal indiscretion.

(*c.*) The liability to the disease in this way is undoubted. *Dr. Pollard.*

I have known instances where healthy men have contracted the disease from cohabiting with a leprous woman whose genitals were ulcerated, just in the same way as syphilis. *Dr. Duffey.*

Yes. The disease was in the stage of ulceration.

(*b.*) A healthy girl, æt. 7, slept in the same bed with a boy, æt. 9, who was diseased; she became affected with leprosy.

(*c.*) Yes. A woman had connection with an old leprous African; she aftewards became diseased. *Dr. Carney.*

From what I have seen and heard in Surinam, Dutch Guiana, where more attention is paid to the disease than in British Guiana, I believe it to be contagious. I have know an officer of high rank there contracting it from cohabitating with a woman whose family were affected with it. In Dutch Guiana, people are afraid of shaking hands with any persons who are suspected of the disease, and even of sitting on the same chair which they have occupied, or of using the same privies. *Dr. Van Holst.*

11. There is an Ordinance regulating the disposal of persons affected with leprosy, who are found in the streets or thoroughfares (*vide* Appendix). *Dr. Manget.*

They are forbidden by law to be seen in public, selling wares, or exposing themselves; but the law is insufficient. *Dr. Reed.*

There is an Ordinance to compel the confinement of lepers to the asylum of the colony; but as informations are seldom laid, it may be considered inoperative. The negroes, being comfirmed fatalists, although firmly believing in the contagiousness of the disease, take no exception to the freest intercourse with lepers. *Dr. Pollard.*

Unfortunately there are more lepers at large than are confined, at present, in the asylum; moreover they freely communicate with the healthy, causing the disease to spread rapidly. *Dr. Duffey.*

Neither the lepers nor their friends wish that they should be confined, as they dread the seclusion and separation from their ordinary habits almost as much as penal servitude. Any cases duly certified and sent to the Leper Asylum are kept separated ever after. *Dr. Carney.*

In British Guiana, we daily see scores of lepers communicating with other persons without any restrictions, and even preparing and selling different articles of food. In Dutch Guiana, on any suspicion the person is brought before the medical committee, and, on the least proof of the existence of the disease, he is sent to the Leper Establishmen, where the lepers are kept separated from the rest of the community. *Dr Van Holst.*

12. The Ordinance of 1858 gives all information as to the provisions made on behalf of lepers. There is an asylum for their reception. They are not admitted into the general hospitals. *Dr. Manget.*

The Combined Court vote annually certain sums for the support and treatment of the leprous poor. A separate and isolated establishment, termed the General Leper Asylum, is provided for them. It was established in 1858, and is situated on Mahaica Creek. It was formerly a military post; the old barrack building, one story high, and provided with an open gallery round, serves for some of the inmates. A second wooden building, two stories high, has been recently erected. The wards are swept out daily and washed weekly. The ground is partly cultivated by the lepers themselves. Each leper bathes daily, and uses soap. They assist each other in sickness. They are under the charge of a superintendent, who has under him two nurses, male and female, a cook, and washerwoman. They have books, a school, and religious consolation. A surgeon provides medical attendance. The treatment followed for the relief of the disease consists principally in the use of vapour baths of sulphur and nitre, sulphur and iodine, the hot air bath, and the internal and external use of nitric, muriatic, and sulphuric acids, and occasionally iodine and its combinations. A strong belief prevails among the coloured races that the disease is incurable, and they generally refuse to submit to medical treatment for it. The following is the dietary of the asylum; besides some spirits, malt vinegar, and olive oil as *extras* directed by the surgeon. *Dr. Reed.*

Diet of the Lepers.

Monday.—Plantains, 2 lbs., raw; salt fish, 5 ounces; oatmeal, 6 ounces; bread, 4 ounces; sugar, 2 ounces; coffee, $\frac{1}{4}$ ounce, raw.

Tuesday.—Plantains, 2 lbs., raw; salt fish, 2 ounces; salt pork, 1 ounce; oatmeal, 6 ounces; sugar, 2 ounces; coffee, $\frac{1}{4}$ ounce, raw; split pease, 2 ounces.

Wednesday.—Plantains, 2 lbs, raw; fresh beef, $\frac{1}{2}$ lb. each; oatmeal, 6 ounces; bread, 4 ounces; sugar, 2 ounces; coffee, $\frac{1}{4}$ ounce, raw; barley, 1 ounce.

Thursday.—Plantains, 2 lbs., raw; salt fish, 2 ounces; ox head, 25 lbs., boiled into soup, of which 1 pint each; oatmeal, 6 ounces; bread, 4 ounces; sugar, 2 ounces; coffee, $\frac{1}{4}$ ounce, raw; rice, $\frac{1}{2}$ ounce, split pease, $\frac{1}{2}$ ounce; barley, $\frac{1}{2}$ ounce.

Friday.—Plantains, 2lbs., raw; salt fish, 2 ounces; salt port, 1 ounce; oatmeal, 6 ounces; bread, 4 ounces; sugar, 2 ounces; coffee, $\frac{1}{4}$ ounce, raw; split pease, 2 ounces.

Saturday.—Plantains, 2 lbs., raw; fresh beef, $\frac{1}{2}$ lb. each; oatmeal, 6 ounces; bread, 4 ounces; sugar, 2 ounces; coffee, $\frac{1}{4}$ ounce, raw; barley, 1 ounce.

Sunday.—Plantains, 4 lbs., raw; salt fish, six ounces; ox head, 25 lbs., for soup, of which 1 pint each; bread, 4 ounces; sugar, 1 ounce; coffee, ¼ ounce, raw; rice, ½ ounce; split pease, ½ ounce; barley, ½ ounce.

Black pepper and salt given as required twice a week. Tobacco and snuff and pipes once weekly.

The Leper Asylum at Mahaica is not adequate for the number of the diseased who could and ought to be sent there. *Dr. Van Holst.*

13. The following is the number in the asylum for five years:—

	Males.	Females.	Total.
In 1858 - -	66	11	77
„ 1859 (additional) -	31	15	46
„ 1860 „ -	23	—	23
„ 1861 „ -	20	7	27
„ 1862 „ -	32	10	42
			215

Dr. Reed.

14. Not from personal knowledge; but if I was to believe in general rumour, leprosy is greatly on the increase here. I certainly see many more lepers about the country than I did 20 years ago; but whether this is due to less coercion being employed to force these unfortunates to remain at home, or to less repugnance on their part in exposing their persons than existed formerly, it is difficult to say. *Dr. Manget.*

From personal knowledge I know that it has been on the increase during the last 20 years.

During the time of slavery in this colony up to August 1838, slave lepers were kept isolated from the healthy; this tended to prevent the disease spreading. On emancipation taking place at that date, the lepers went to live with their friends. Immigration then began, first with the neighbouring West India Islands, and many lepers were introduced. Subsequently, they came here from Madeira, India, China, and Africa, as immigrants.

Dr. Reed.

It has, in my opinion, very palpably so in my district during the last 18 years; and, I have been informed by those who have frequent opportunities of observation, very much so in the river districts of the colony. The sole cause, I believe, to be intermarriage, and free social intermixture. *Dr. Pollard.*

I have every reason, from personal knowledge, to say that the disease is on the increase, owing, I believe, to the influx of immigrants into the colony. *Dr Duffey.*

I believe that during the last seven years it has been vastly on the increase in my district, and that this is owing to the numbers of lepers who are at large and have free intercourse with healthy persons, as well as with each other. *Dr. Carney.*

Without doubt, the disease is fearfully on the increase of late years, at least in this part of the colony. The free intercourse and cohabitation are the principal causes.

On some estates I know several coolies afflicted with it. *Dr. Van Holst.*

15. I have sometimes seen the progress of leprosy checked to a certain extent, for a short time, I thought by hygienic and dietetic measures, but never by pure medical treatment; that is to say, by drugs or remedies. It never undergoes a spontaneous cure. *Dr. Manget.*

Lepers in poor circumstances are especially benefited by proper hygienic and dietetic treatment; the disease often becomes mitigated thereby. Medical treatment may afford relief and suspension, but no cure, of the malady. It is possible that leprosy may undergo a spontaneous cure, but only at the earliest stage, previous to any ulceration. Cases have been observed in negroes, where one of the parents (mother) had the "joint evil;" one of her children, a youth, had yellow spots about the body; these, after a time, faded, and the skin resumed nearly its natural hue. He had no other appearance of leprosy about him. No medical treatment had been used.

None of the patients have recovered wholly; many, having the disease in its different forms, have had it stationary for months and years. *Dr. Reed.*

I have little or no faith in any treatment. By the use of mild mercurial alteratives with sarsaparilla, followed by the nitro-muriatic acid, and of an exclusively vegetable diet, I have kept, I believe, the disease in check, and arrested for a time the access of ulceration. I do not believe that it ever undergoes a spontaneous cure. It sometimes remains in abeyance a whole lifetime after the appearance of the coppery spots; at other times it seems to expend

itself and become arrested, after the loss of the fingers and toes by ulceration; but the reprieve is often only delusive, the disease re-awaking with fatal activity. I have no faith in any attempts at mitigating or curing leprosy; the only remedy available, in my opinion, is absolute isolation. *Dr. Pollard.*

I have never known a case of decided leprosy cured. *Dr. Duffey.*

Temporary relief only. I am not aware that leprosy ever undergoes spontaneous cure. *Dr. Carney.*

I have never seen a perfect cure of leprosy. *Dr. Van Holst.*

16. There is no registration of births and deaths. *Dr. Manget.*

The people of British Guiana, by the Census of 1861, was:—

Country of Demerara, exclusive of George Town - -	62,195
„ Essequibo - - - -	27,959
„ Berbice - - - - -	24,119
George Town, the capital - - - -	29,174
New Amsterdam and Stanley Town - - -	4,579
	148,026

About four years ago a person was appointed as Commissary of Population, but after a short time the office was abolished. Such an officer is much wanted. *Dr. Reed.*

There is no registration of births, but there is one of deaths, including the causes of death, on all estates in this colony; it has always existed, so far as I am aware. *Dr. Carney.*

17. I am sorry that I am not in a position to give such information as would elucidate the many and important queries submitted by the Royal College of Physicians; and I much fear that this want of knowledge of a disease, which by the great majority of the community is believed to be on the increase, is but too general amongst the medical practitioners in this community. I have never heard of any one having made a particular study of leprosy. In 1858 certain queries (sent by the Secretary of State for the colonies) were submitted to the medical gentlemen of this colony. Out of 37, nine only answered them; these answers, with the queries, I now forward (*vide* Appendix). *Dr. Manget.*

A commission on the subject of leprosy has been appointed in this colony, and probably it will soon acquire the information desired.

As leprosy is considered generally a contagious and hereditary disease, admitting that there is a predisponent tendency to imbibe and develop it, its prevention must be a matter of police regulation, by enforcing the perfect isolation of the lepers from the healthy population. *Dr. Reed.*

From close observation and more than ordinary attention to the disease, I consider that one-sixth of the entire Coolie and black population are affected with one kind of leprosy or the other. The best preventative is separation. *Dr. Carney.*

No. 18.

CAPE OF GOOD HOPE.

1. Leprosy is a disease that has been prevalent at the Cape since I commenced practice there upwards of 40 years ago; and as long before that time provision had been made by Government for isolating leprous persons, under the impression of the disease being contagious, it has probably been known there from an early period of the colony as a Dutch settlement. There are two forms, the tubercular and the anæsthetic. In the former the disease commences with tubercles, accompanied with discolouration of the skin, and more or less insensibility to the touch, usually on the cheeks, forehead, alæ nasi, and lobes of the ears, causing as they increase great deformity; also hoarseness, ozæna, and symptoms indicative of disease in the air tubes and lungs. In the second form, the fore-arms and hands and legs and feet are first affected with swelling and insensibility. Vesications appear over or immediately under the metacarpal or metatarsal bones, or the phalanges of the fingers and toes. These burst, ulcers form, and extend deeper and deeper until the joint drops off. This process is repeated again and again with the same result. The strength of the patient becomes undermined, and he dies usually from bowel disease.

These two forms I consider as quite distinct, although they occasionally occur in the same patient, the one form supervening upon the other, and the hereditarily predisposed may be attacked with either. *Dr. Abercrombie.*

It is common at the Cape, principally among the Hottentots and half-castes. In some cases the fingers are contracted and flexed, and even ulcerated off, before there is any unusual appearance about the face or trunk. In other cases the extremities are intact, while the face is horribly disfigured by enormous enlargements about the eyebrows, cheeks, &c. I regard the two forms as varieties of the same blood disease. They are both known by the name of leprosy. In India as well as in South Africa I have seen one form running into the other.

Dr. Ebden, President of the Government Medical Committee of Cape Town.

2. In the hereditarily disposed it seldom occurs before puberty. I have seen it, however, as early as two years of age. The usual period seems to be from 20 to 35 years. The earliest symptoms in the tubercular form are the tubercles on the face and ears; and in the anæsthetic form the swelling of the hands and feet, with a harsh brawny feeling, and general insensibility of the skin. *Dr. Abercrombie.*

Usually soon after puberty, but sometimes in childhood. The contraction and flexing of the fingers and toes is, I think, the first symptom; sluggish ulcers soon follow on this state. Sometimes anæsthesia of the skin, at other times the enlargement of the face, are the earliest symptoms. *Dr. Ebden.*

The following is the return of the ages of the lepers in the Hospital at Robbin Island in August 1858.

———	Under 20 years.	20–30.	30–40.	40–50.	50–60.	60–70.	70–80.	Average Age.	Total No. of patients.
Males - - -	3	12	15	3	1	2	1	34	37
Females - -	2	1	6	4	2	1	1	40	17

Dr. Alex. Abercrombie.

3. The disease in either form is slow in its progress. From three to five years usually elapse before the disease is fully developed; and although from 10 to 12 years may be usually the average duration of the life of a leper, I have known it prolonged to 16 or 18 years. *Dr. Abercrombie.*

In some cases the disease is severely marked at 20 or 25 years of age. It often terminates fatally at 35, but sometimes old age is attained. *Dr. Ebden.*

4. As far as my observation goes, the disease occurs more frequently in males than females, and probably in the proportion of two to one. *Dr. Abercrombie.*

Neither in South Africa nor in any part of India, either eastern or western, have I noted that one sex is more liable than the other. *Dr. Ebden.*

5. It occurs decidedly in the largest proportion among the Hottentots, next to them among the negroes, and last of all among the whites or Africanders. I have met with it in Europeans, but rarely. *Dr. Abercrombie.*

In South Africa the Hottentots are for more liable than any other classes or races of man. Natives of the Mozambique sometimes suffer. Whites only rarely so. Black negroes do not suffer so much as the light copper-coloured Hottentots.

In India, grain-feeding Hindoos, who are poorly off, suffer in a far larger proportion than either Mussulmen or other castes or classes of Hindoos. Amongst the aboriginal races, such as Bheels, Coels, &c., it is very uncommon. *Dr. Ebden.*

Among the Hottentots more than any other race, from their proverbial want of cleanliness and poorness of diet. *Colonial Medical Committee*, 1853.

The inmates of the lazaret in August 1858 were as follows:—

MEN.					WOMEN.				
Whites.	Negroes.	Africanders.	Hottentots.	Total.	Whites.	Negroes.	Africanders.	Hottentots.	Total.
3	10	11	13	37	—	1	4	12	17

Dr. Alex. Abercrombie.

6. It does not appear to occur more frequently in any particular locality. The dwellings of the poor, among whom it chiefly occurs, are badly constructed, ill ventilated, and cold. Their habits are filthy, and their food is often innutritious, consisting much of salted fish.

In the few cases of the disease I have seen in whites and Europeans, their habits had been cleanly, and their food good and nutritious. *Dr. Abercrombie.*

The Hottentots usually reside away from the sea, in open valleys, high and dry, not liable to malaria. Animal food is not scarce, but fruits and vegetables are so amongst Hottentots, who rarely wash their bodies or their clothes. *Dr. Ebden.*

7. Close rooms and poor diet decidedly hasten its progress, while generous diet and stimulants, judiciously used, certainly retard it. *Dr. Ebden.*

Its progress is, I think, much slower among those who have the means of cleanliness and of good diet at their command than among the poor and destitute. *Dr. Abercrombie.*

The crowded and unventilated tenements of the poor, abounding in filth of the most disgusting kind, festering and putrefying around. That such a state of things exists in Cape Town may create astonishment, and not be generally known.

Colonial Medical Committee, 1853.

8. Certainly hereditary; but I have known instances of one member only of a family being affected. *Dr. Abercrombie.*

Most decidedly hereditary. I have known instances where one member only was afflicted, and then the disease has appeared to pass away from that family. *Dr. Ebden.*

That it is highly hereditary there cannot be a doubt; and that poor living, want of cleanilness, mendicant misery, and exposure to cold and damp, are but too constant attendants of this dreadful malady, and tend to generate and keep it alive.

Report of the Colonial Medical Committee of Cape Town to the Secretary of the Government, 13th October 1853.

The children of lepers are usually born healthy, and they seldom evince any symptoms of the disease within puberty, and often until a much later period, whilst some escape it entirely; the disease passing over one generation to appear, as occasionally happens, in the succeeding one. *Dr. Alex. Abercrombie.*

9. I consider it to be a peculiar disease, and in no way connected with any other. Tubercular venereal affections may be mistaken for it. *Dr. Abercrombie.*

It is a disease sui generis. *Dr. Ebden.*

10. I have never been able to trace the disease to contagion. I have known married persons, one being a leper, cohabiting for years, without the other suffering. I do not consider it contagious or transmissible by sexual intercourse. *Dr. Abercrombie.*

I have not seen a single case where it was communicated by contagion. I have known lepers cohabiting with females who remained exempt. *Dr. Ebden.*

Its being contagious is problematical to a very great degree.

Colonial Medical Committee, 1853.

With regard to the contagious nature of the disease, such an opinion, at the Cape at least, is no longer entertained; the fallacy of such an opinion has long since been established.

Dr. Alex. Abercrombie.

11. There is no law, as far as I know, to prevent lepers communicating freely. The present provision for lepers by Government was made, I believe, originally not so much to afford subsistence to the destitute, as by segregating them, to prevent the extension of the disease by hereditary transmission. But as few of the lepers throughout the colony resort to the institution, little good has been effected. *Dr. Abercrombie.*

There is no law authorizing the deportation of any leper, nor his removal from the home of his friends. The Government provides a very comfortable asylum for all lepers; but its insular position deters many, and their friends prefer caring for them at home.

Dr. Ebden.

12. There is a leper hospital on Robbin Island at the entrance of Table Bay, about eight miles from Cape Town. The site is good, but the buildings are defective; there is no arrangement for warm baths, essential in the treatment of all cutaneous diseases.

The institution forms part of a general infirmary on the island for lepers, lunatics, and chronic ailments; but each of these classes is separately accommodated; and the whole are under the care of a medical gentleman, who resides on the spot. *Dr. Abercrombie.*

Refers to the tables and reports from Robbin Island, where the lepers are liberally fed and warmly clothed.

Lepers are not generally admitted into an ordinary hospital, but they are so temporarily in some rare cases.

At one time a leper asylum existed near Caledon, some 60 miles from Cape Town.

Dr. Ebden.

13. For the last 10 years the average number in the hospital on Robbin's Island has been from 50 to 60. Some lepers, I believe, are maintained at the public expense in the eastern province also of the colony. *Dr. Abercrombie.*

Refers to tables, &c. There are very many lepers living with their friends in various parts of our colony. *Dr. Ebden.*

In August 1858 there were 54 patients in the leper institution. Of this number eight were affected with both forms, the tubercular and the anæsthetic, of the disease.

Dr. Alex. Abercrombie.

14. Of the extent to which leprosy prevails here, no estimate can be formed from the mere number of the patients in the institution on Robbin Island. There is a strong prejudice against it, and none resort to it but the really poor and outcast. The disease being beyond doubt hereditary, and no steps being taken to segregate the lepers and separate the sexes in the colony, it may be reasonably inferred that the disease is on the increase; and such is also my opinion from the number of lepers now to be met with in the streets of Cape Town compared with former years. *Dr. Abercrombie.*

Neither in India nor in South Africa does the disease seem to be increasing, but at the same time I do not believe that it is at all palpably on the decline in either country. I have been in the habit of seeing and noting particulars connected with the leprosy for the last 23 years,—from 1839 to 1847 at the Cape,—from 1848 to 1861 in India,—and again in 1862 at the Cape. *Dr. Ebden.*

15. I have never seen a case of spontaneous cure. As to treatment I have seen no satisfactory results beyond temporary relief of suffering. *Dr. Abercrombie.*

Lepers never recover; but good food, pure air, cleanly habits, with tonics and stimulants, do a very great deal to retard the progress and mitigate the severity of the disease. *Dr. Ebden.*

16. 320,000 is the estimated population, but no Census has ever been taken. The only registration of births and deaths is very incomplete and inaccurate. *Dr. Ebden.*

The population of the colony is now estimated at 300,000. A registration of births and deaths in Cape Town, and I believe throughout the settlement, was formerly kept, and a fine attached to neglect in either of these respects; but, the fine being seldom enforced, the law fell into disuse, and we have now no certain data to form a correct opinion as to the mortality from any disease. *Dr. Abercrombie.*

17. I am not aware of any particular locality in this colony where leprosy especially prevails. I send a thesis on tubercular leprosy by my son, Dr. Alexander Abercrombie, printed at Edinburgh, 1860. Appended to it are two plates containing sketches of lepers suffering from the tubercular form of the disease, taken from photographic likenesses of patients in Robbin Island Institution, with short notes of their cases. *Dr. Abercrombie.*

I refer to the tables, reports, and statements from Robbin Island; also to Dr. Hussey's report on leprosy of June 1819, Dr. John Murray's ditto of December 1822, and Dr. John Arthur's report of December 1827. *Dr. Ebden.*

The Medical Committee strongly urge on the Municipality of Cape Town the necessity for a rigorous inquiry into the state of the lanes and dwellings inhabited by the poor and coloured classes of the community, for the removal of nuisances from them, as experience has fully shown the efficiency of sanitary arrangements in preventing the generation and checking the extension of disease, whether contagious or not, amongst a dense and overcrowded population. *Report*, 1853.

Dr. Dyer, the Secretary of the Colonial Medical Committee, in a letter dated 27th May 1863 to the Government of the Cape, states, that the Report of 1853 contained a report from Dr. Birtwhistle of Robbin Island, and extracts from records as far back as 1818–19; also a copy of a letter from the Medical Committee, dated 27th June 1842, with other annexures.

No. 19.

SIERRA LEONE.

1. Yes.

There is but one form of leprosy known here, but in different stages of the disease it assumes different appearances. The first or papular stage may continue so for years, and not go further. The second, or tubercular stage, may also last for years, never getting to the third or ulcerative stage. This generally terminates fatally in from one to ten years from the commencement of ulceration, which usually commences in the feet, destroying the toes joint by joint, until it reaches the metatarsal joints, where it stops, and then commences in the fingers, and follows the same course until it destroys all the phalanges.

The disease being looked on with superstitious fear by the natives, they are very unwilling to give any information on the subject, or even to talk about it.

2. Generally after puberty. The large papular eruption, with thickening of the lips.

3. From 30 to 40 years of age. It proves fatal in from one to ten years after, according to the strength of the person attacked.

4. About equal.

5. I have never seen a case of it in a European. It is altogether confined to the natives, and particularly to those who come from the Niger and Congo neighbourhoods.

6. Amongst the labouring population.

Locality seems to have nothing to do with the development of the disease, as it is most common in the sea and mountain districts, which ought to be healthier than the town.

The dwellings are made mostly of wattles plastered with mud, and thatched with bamboo.

The ordinary diet is corn or vegetables, with fish.

7. Weakness of constitution.

8. Invariably, as far as I can ascertain, it generally skips a generation.

Yes.

9. I believe most of the cases here are connected with syphilis, as most of the patients I have seen have themselves, as well as their parents, suffered from this disease. In one case of leprosy, in the first and second stages, the patient is also affected with elephantiasis of both legs.

10. No.

c. No. I have seen a healthy looking woman living with a leper, by whom she has a child; neither mother or child are infected.

11. There is no restriction.

12. No provision. Lepers are admitted into the general hospital.

13.

Males - -	57
Females - -	46
	103

They are principally liberated Africans, who brought the disease with them.

14. I do not believe the disease is increasing here.

15. In the first stage the iodide of arsenic with mercury seems to be useful. In the more advanced stages no medicine will effect a permanent cure.

16. The population was, by the Census of 1860 :—

Males - -	21,107
Females - -	20,390
	41,497

There is a general and uniform registration of births and deaths, including the causes of death, to be found in the Registry Office, Sierra Leone; it has existed since 1857.

17.

Freetown District - -	32
1st Eastern - - -	54
2d „ - - -	10
Western or sea - -	7

Mr. Bradshaw, Colonial Surgeon.

No. 20.

TANGIERS.—TUNIS.—TRIPOLI.—BENGAZI.—CAIRO.

1. *Tangiers.*—Consul Sir J. D. Hay states that he applied to Dr. Daston, an English physician resident there, for information on the subject of leprosy in Morocco. Dr. Daston describes only the different forms of lepra vulgaris and lepra syphilitica. The former is rare; the latter is rather common amongst the inhabitants both of the town and district, and amongst those of the interior. The Moors term the disease ezdam.

The information received by the Consul from the Vice-Consuls on the coast was vague and imperfect, but it seemed to confirm the statements of Dr. Daston.

Tunis.—True leprosy is not known in Tunis. Under this name, however, vitiligo, psoriasis, and elephantiasis are often confounded, though they are very distinct diseases. Leprosy is a constitutional disease; whereas elephantiasis is independent of any special diathetis. *Drs. Ferrini and Lambroso.*

Tripoli.—Dr. Robert Dickson, Medical Officer of the Quarantine Department, describes only the lepra vulgaris and the lepra syphilitica.

Bengazi.—True leprosy is not known in the Bengazi and surrounding districts. *Dr. Nani.*

Consular District of Cairo.—Leprosy is scattered over this consular district; most common in Cairo, but even there rare.

a. The tubercular form is most frequent among the Arabs, and the anæsthetic among the Jews and natives of the Danubian principalities.

c. White shining patches with hard base, in various degrees of ulceration; puffy and waxy appearance of the skin around the patches; the face and upper parts of the body and upper extremities chiefly affected; a general bloodless condition of the system. *Consul Drummond Hay.*

Jeddah.—No cases of leprosy here, but I understand that there are some cases in the Yemen. *Consul Stanley.*

2. *Cairo.*—The majority of lepers here are under thirty years of age. Of five cases one appeared to have been attacked at twelve, the other at about eighteen years of age. *Consul Hay.*

3. No authentic information.

4. *Cairo.*—It is thought by native medical practitioners to be more common in the male sex; but this may be incorrect, as so little is known of female life among the Turks and Arabs. *Consul Hay.*

5. *Cairo.*—In Egypt it is chiefly found among the Jews; next in frequency among the Copts; very seldom among the Arabs. The Bedouins are said to be free from the disease. On the whole the lighter coloured races seem to be most prone. *Consul Hay.*

6. *Cairo.*—Most frequently amongst the very poor.

a. Close, confined, and damp parts of the city.

b. The houses very much confined; not receiving much light; noxious effluvia in almost every direction.

c. Habits dirty in the extreme.

d. Ordinary diet, salted and often almost putrid fish, vegetables, and bread, seldom eating good animal food.

e. Scribes and money changers. *Consul Hay.*

7. No information.

8. *Cairo.*—Does not appear to be hereditary. No instance known of two members of a family being attacked. *Consul Hay.*

9. No information.

10. *Cairo.*—No instances of contagion. *Consul Hay.*

11. *Cairo.*—They communicate freely with the rest of the community, and mostly live by begging in the streets. *Consul Hay.*

12. *Cairo.*—No provision made. Four or five cases have been admitted into the public hospitals at intervals. *Consul Hay.*

13. None.

14. Nothing known on this point.

15. *Cairo.*—No satisfactory results have been observed. *Consul Hay.*

16. *Cairo.*—In Cairo the population is about 300,000. The number of lepers is probably much larger than is generally believed. Too little inquiry has ever been made to elicit facts concerning predisposing or exciting causes of disease. *Consul Hay.*

17. No information.

No. 21.

JERUSALEM AND CAIFFA.

1. Mr. Finn, Her Majesty's Consul at Jerusalem, says:—The disease popularly named leprosy here by the European residents and travellers is really a form of elephantiasis, not contagious, but an infection of the blood. I believe there is but one form of it existing here. The disease to which I refer causes swelling in the nose, fingers, and toes, then eats away the palate and the above-mentioned extremities.

2. It is generally first exhibited at the time of puberty.

3. Fatal in a very few years.

4. I do not know.

5. It is only found among the native population, and is almost entirely confined to the Mohammedans. There is, however, one case of a European Jewish boy being afflicted by it. I am not aware that he was born here.

6. There is nothing remarkable before the developement of the disease; afterwards all lepers live by begging.

This is a healthy climate. The patients have not an unhappy appearance; they are only disgusting to public notice. Some have a little property invested in baggage animals, and they themselves bring in wood, charcoal, &c. to the city.

7. None.

8. I am told it is always so.

9. Medical men here have told me that they believe it to have originated in neglected syphilis in the progenitors of the present patients.

10. I have never heard of such instances.

11. Contact is habitually avoided on all sides. The beggars have vessels on the ground before them into which the charitable cast their alms.

12. In one part of the city, within and close to the wall, there are some clay-built cottages, not more than a dozen, for the reception of those patients (usually denominated lepers) for whose benefit large endowments have been left by benevolent persons in past times. These dwellings have a mud wall surrounding them on three sides, the fourth side being the wall of the city; and the doors and windows are turned toward the wall. No medical attendance is provided.

13. The number is generally about a dozen.

14. It has neither increased nor diminished.

15. It is never cured spontaneously.

16. No such registration.

17. A few lepers are found at Nablus and at Jaffa.

Mr. Sandwith, Her Majesty's Vice-Consul at Caiffa, states that there have been but three cases of leprosy in that district—which includes the towns of Tiberias, Safed, and Nazareth—for many years past. They all occurred in one family in Caiffa; a woman who died, six years ago of the disease at about 40 years of age, her brother who is in a leper house at Damascus, and her son, 16 years of age, living in this town with his father and brother; neither of whom is diseased. Its manifestations in this boy are unseemly swollen blotches on the face, hands, feet, and ankles; the nose is twice its natural size; the eyes are half hidden by the swelling of the surrounding parts, and the skin is red and shining. The fingers are also double their natural size, as well as the hands and the feet; and the latter sometimes swell to such an extent as to cause the patient great pain, the skin even cracking and becoming ulcerated.

The disease first appeared at seven years of age. His health is tolerably good.

He mixes freely with his family and the friends of the family; but he never goes beyond the courtyard of the house.

In this part of the country no provision is made for persons affected with leprosy, as the disease is hardly known.

No. 22.

BEYROUT AND CYPRUS.

1. Consul-General Moore states that the disease is all but unknown in the consular district of Beyrout, with the exception of Cyprus.

Vice-Consul White, from information derived from the medical men of that island, states that leprosy is seen there in two forms, the tuberculous and the anæsthetic. Indolent spots on the skin, at first pale, yellow, and shining, then dull and bronze coloured, with slight swelling, especially of the face; sometimes with anæsthesia; at others with hyperæthesia. After a greater or longer interval the spots are followed by tubercles, reddish or livid, and of various sizes; mostly in the face, causing great deformity of the features. Subsequently the tubercles ulcerate, the deeper tissues are invaded, and portions of the extremities, principally the fingers and toes, fall off. The anæsthesia and loss of voice increase. Sometimes tubercles appear on the eye-ball, the cornea ulcerates, and the organ is totally destroyed. The mucous membrane of the nares, mouth, and throat are sometimes similarly affected, and death may be caused by œdema of the glottis.

2. Generally about puberty. Before the appearance of any spots on the skin, there is in many cases a general malaise of the system, frequently supervening upon a sudden check of the perspiration, with great physical and mental depression.

3. This varies. In some cases it is developed far more rapidly than in others. At the leper house at Nicosia the disease often remains long stationary, the inmates there not having the means of committing excesses, and abstaining generally from fat and oily food. When the disease appears about puberty, the patient seldom survives beyond 35 or 40 years of age.

4. More frequently among males. Perhaps 3 out of 5 lepers are males.

5. It is confined almost exclusively to the Christian community; only one Mussulman family in Cyprus is known to be affected with it.

6. Most frequent among the poor agricultural classes living in the country.

a. It occurs chiefly, though not exclusively, inland, near marshes or flowing water. The dry and hilly districts are nearly free from it.

c. Want of personal cleanliness. Mussulmen, who are accustomed to perform frequent ablutions, are scarcely ever attacked.

d. Bad and. unwholesome diet. The excessive use of salted pork and salted fish, often rancid, by the Christian peasants, is considered a great cause of the disease. It is believed in Cyprus that the use of pork in a state called in Greek 'khalaxeux,' (i.e. like hail), in consequence of a number of white grains or tubercles, of the size of hailstones, being dispersed through the fat, is apt to give rise to leprosy. The Mahometans abstain from pork, and make very little use of salted provisions.

7. The above circumstances and conditions; also mental depression.

8. Yes; without doubt hereditary.

In the leper house a patient died leaving eight children, two of whom were affected, and the rest are healthy.

9. There is no reason to suspect any such connexion.

10. No; the disease does not appear to be transmissible even by sexual intercourse.

11. No. A house is set apart, near Nicosia, for them, and they are required to dwell there; but numbers manage to escape, or to evade compliance with the regulations.

12. No provision is made for the subsistence or medical treatment of the lepers. They live on alms from the archbishop, who supplies them daily with bread, and on private charity.

13. There are at present 15 men and 20 women in the lazaret. The excess of females is owing to the fact that the men more frequently escape from it. The number of 35 is said to be about one third of all the lepers in the island. If this be correct, the proportion to the population is about one-half per cent.

14. There has been no observable increase or decrease during the last 15 or 20 years.

15. A spontaneous cure has never been known. The general opinion of the medical men is, that though much may be done to check its development, the disease itself is incurable.

16. No information.

17. The districts of Messaoria, Morphon, Lapithus, and Kythræa, all situated in a humid plain, are those where the disease prevails most in Cyprus.

No. 23.

DAMASCUS.

1. Mr. Rogers, Her Majesty's Consul at Damascus, states that leprosy is known in this consular district.

a. There are two forms of the disease. 1. Baras el Israîly, or Israelitish leprosy, which consists of whitish scales on the skin; and 2. Jezâm, or, Da el Ased, or the lion-like disease, so called from the fierce appearance of people suffering from it; the lips, nose, lower jaw, and eye-lids swollen, and rounded eyes.

b. The first of these two kinds is very rare. I have never seen a case of it, but have heard of two.

The other kind is quite distinct from it, and may—on more careful and scientific investigation—be found to consist of varieties which have not been particularized hitherto.

c. The usual characteristics of the first kind are, the formation of scales over the skin, which peel off like bran or small fish scales, with pains in the limbs, but no ulcerations.

In the other kind, the nose and upper lip become swollen and shiny; ulcerations form on the face; the hair of the face and head falls off; the voice becomes hoarse; the skin of the face becomes hard, lumpy, and wrinkled; and great pain is felt in the limbs. The nose is gradually eaten away, and sometimes the lips also; the hands and feet next swell; the nails of the fingers and toes ulcerate and fall off; and in some cases not only the fingers and toes, but even the hands and feet, as far as to the wrists and and ancles are eaten away; and sometimes, though rarely, ulcers are formed on other parts of the body.

2. It generally manifests itself in adults; but many cases are also known of children of tender years being attacked by it. The first symptoms are swellings, hoarseness, and pains in the limbs.

3. It sometimes arrives at its height within a short time, varying from one to four or five years, and then proves fatal. In some cases it reaches a certain stage, and, not progressing, the patient may live to an old age.

4. Males are much more frequently attacked than females, in about the proportion of about two or three to one.

5. The disease is known chiefly amongst the poorer classes of the mountain peasantry, both Moslems and Christians. These may be called white races, being hardly as dark as the Italian peasantry; but no instance of its having occurred amongst the Jews of Syria, nor amongst the negroes, is known here.

6. It is found chiefly amongst the poorer peasantry, but members of the richer classes of mountaineers are also sometimes attacked by it. It is not known to have attacked the townspeople of Damascus, nor of the other large towns in Syria.

a. The districts most subject to it are highlands, table-lands, such as the mountains of Lebanon and Anti-Lebanon, and the Hanrân, and very rarely on the seacoast.

b. The peasants' dwellings are built and maintained without the slightest regard to sanitary rules. Animals of all kinds frequently share the one room of which the house consists, with the owner, his family, and guests. Dustheaps and dunghills are formed in any open space near the houses.

c. Their habits of life are dirty in the extreme.

d. Their ordinary diet is, in the daytime, bread with cheese, olives or other fruit; and in the evening, boiled rice, lentils, or wheat with butter, or oil and sour milk, and meat but rarely. They can go for a very long time on little or no food, and eat inordinately when they get an opportunity of doing so at another's expense.

e. Their ordinary occupation is agriculture, wood-cutting, charcoal or lime-burning, mule or camel driving, and tending sheep or goats.

7. An irregular mode of life and want of cleanliness aggravate the disease; and lepers have assured me from their own sad experience that oil taken in cookery or in salad causes great pain, and an increase of the disease. Sexual intercourse seems to have the same effect.

8. It often happens that only one member of a family is attacked, and that the others remain free. Few lepers have children; but when they do some of the children are diseased, and others are not.

9. Leprosy is a separate and independent disease, known in Arabia for many centuries, and mentioned in the Koran of Mohammed under the name of jezâm; whereas syphilis was not known here until the French invasion under Napoleon, when his soldiers brought it hither, whence it is called Hal Franji, or the Frank evil.

10. It is not contagious, and not transmissible by sexual intercourse. I know a family who were living very near to the Christian leper house, and although the children of that family were frequently in contact with the lepers, none of them are diseased.

11. In towns there are no restrictions on lepers; but the villagers are afraid of contagion, and therefore oblige the diseased person to proceed to Damascus, or some other city where there may be a leper house. Those who do not or cannot conform to this custom are made to live in a cave or hut outside the village, where they remain in perpetual quarantine.

12. In Damascus there are two establishments, one just outside the city walls for Moslems, and the other in the Christian quarter, for Christians, where the lepers of these sects are respectively fed and clothed from the proceeds of property—such as shops, houses, &c.—entailed for their benefit.

Lepers are never admitted into general hospitals.

The buildings are of the poorest sort, and no medical aid is afforded to the inmates. Their mode of life is similar to that to which they were accustomed in their villages.

13. Before the troubles of 1860, there were about 50 lepers in the two establishments, viz., 20 in the Moslem, and 30 in the Christian one. Of the former there remain 16 or 17, and of the latter, some died of fright, and others returned to their village huts; but there are now more than 30 Christain lepers who are desirous to come to Damascus as soon as the house, which was burned down, shall have been rebuilt.

14. It does not seem to have either increased or diminished much of late years.

15. When leprosy has gained an advanced stage, there seems to be no known means of diminishing or of curing it. I have heard of only three cures, and in each case the disease was in the early stage.

I never heard of a spontaneous recovery from leprosy.

16. No such registration.

17. The popular belief in Syria is that leprosy is caused by the sexual intercourse of the parents during the period of menstruation in the mother. This idea is negatively supported by the fact of the non-appearance of the disease amongst the Jews of this country, who are most scrupulous in their observance of the Mosaic law of purification. On the other hand, sexual intercourse during the menstrual period, if it occurs in the villages, may also occur in the towns, and yet leprosy is not seen in the latter places.

On the cases I have lately seen, one was a man from Safed. He was attacked about six years ago, when an ulcer formed on his nose, of which the bone and cartilage have been eaten away; but the sore has healed. His lips are still considerably swollen, but there is no sore on the face. He is rather hoarse, and has a constant irritation in his throat. His hands and wrists are swollen, and there is a constant suppuration from his nails, some of which have fallen off.

A man from Sâk Wady Barada was attacked about 10 years ago. His nose is quite gone, and not healed up. His voice so hoarse as to be hardly able to make himself understood. He has a painful cough; nearly all his fingers are gone; his toes are going by degrees; suppuration continues in both hands and feet.

In Haifa I knew a family of native Christians, consisting of four sisters and a brother. All the sisters were married; two of them and also the brother were lepers; the other two were free from the disease. The leprous sisters had children; some of whom are diseased, and others free. The brother, after a residence of about ten years in the leper house at Damascus, died last week in a convulsion fit, which is the usual end of those afflicted with leprosy.

The cities in which there are leper houses are Damascus, Jerusalem, Nablus, and Ramleh. The popular belief is that cutaneous diseases are arrested in their progress by the patient removing to either of these places.

No. 24.

ALEPPO.

1. It is scarcely ever seen in the city of Aleppo, but occasionally in the adjacent villages.

a. Avicenna has described two varieties of the disease; the dormant and the progressive, the second only running on to ulceration. The division I think a true one. Of the ulcerative variety I have seen two forms, the tuberculated and the vesicular (the anæsthetic of Dr. Wood of America). They seem to belong to one common morbid state.

c. The tuberculated. Thickening, glossiness, and dark redness of the skin; the eyes red, suffused, or watery; sneezing, difficulty of breathing through the nose, hoarseness and loss

of voice; the hair of the face, including the eyebrows, falls off; offensive odour of breath and perspiration, &c. Tuberculous growths appear on the face and extremities; these ultimately break, and discharge an ichor; the features become more and more changed; the septum and cartilages of the nose are often destroyed; the loss of voice becomes complete; the smaller joints fall off, and the larger ones, as the knee, become affected. The circulation becomes feebler, and the patient sinks generally from diarrhœa or dysentery. In the vesicular variety, instead of tuberculous growths, large vesicles or bullæ form, especially on the hands and feet, and on breaking leave ill-conditioned ulcers. The eyes are watery, and the hair falls off, but much of the natural appearance of the face remains, and the voice is generally unaffected; the joints are affected, and the case terminates as in the tuberculous variety. *John Wortabet.*

2. Very generally between 20 and 50.

3. Perhaps in 10 years or so, but I do not know for certain. Patients generally live for many years.

4. In males much oftener than in females; in the proportion of perhaps 10 to 1.

5. I have no means of knowing. The Jews are said to be exempt from it.

6. Generally, but not exclusively, among the poor.

a. Urban and rural; rarely on the sea coast. Low, damp, and malarial localities seem to favour it.

b. Bad.

c. Unclean.

d. Poor diet, salted and cured meats, with occasional over indulgence.

e. Over confinement, perhaps.

7. The circumstances stated above.

8. Very often. I know only a single case of one member alone of a family being affected, the others remaining free.

9. It may be connected with syphilis, but it is certainly a specific disease.

10. The Arabian physicians and the natives of the country believe it to be contagious, but I have never found it to be so.

c. It does not appear to be so.

11. No; but the segregation is very often not strict, nor sufficient to prevent its spreading if it were contagious.

12. There is no provision in Aleppo. In Damascus there is an endowed asylum for lepers, helped by charity. In Jerusalem I believe they live in a separate quarter.

13. None.

14. It has probably decreased; the cause may be the improved habits of life.

15. It is held to be unamenable to treatment. I think I have seen one case of spontaneous cure. The case had reached the first stage of ulceration. An attack of small pox seemed to have accelerated the curative process. The patient had had leprosy for two or three years, and had had a remarkably good constitution previously. (It is not stated how long he has been free from it.)

16. No information.

17. Damascus and Jerusalem afford the best field for the observation of leprosy, and the reports of competent medical men from these districts would be highly valuable.

Consul Skene of Aleppo has transmitted, besides the foregoing report, letters from Her Majesty's vice-consuls at Alexandretta, Latakia, and Tripoli, stating that in these places the disease is unknown.

No. 25.

RHODES.

1. Consul Callander transmits the replies of an Italian physician, Dr. Mazzinghi, "who "has been practising as a medical man in some of the neighbouring islands, as well as in "Rhodes, for several years past."

A great number of cutaneous diseases are confounded by the islanders under the name of leprosy, so that persons affected with only lichen, scurvy, syphilis, psoriasis, &c., are often condemned as lepers.

a. The various forms I have observed on the small adjacent islands of Symi and Calchi (Halki), are herpes (erpete forforaceo rotonde of Alibert), Egyptian or Arabian elephantiasis, Greek elephantiasis, and lupus. The first-mentioned form, or herpes, is quite distinct from the other three forms, which are all probably varieties of the same morbid state. In one case of the Greek elephantiasis I saw at Nimo near Symi, in which the man had been ill for 24 years, the body was a single sore, with the exception of the face, which was natural, but thin; the voice was unaffected, and there was no mutilation of the extremities.

2. Generally after 16 years of age.

3. It is said to be sometimes developed in a few months; at other times not for many years. Usually, after lepers have been separated from their families, the disease progresses rapidly, and life is more quickly extinguished.

4. More frequent among males than females.

Consul Callander says that it is supposed that about one-fourth are females.

5. The disease is chiefly confined to the Greek population in these islands.

6. I have only seen it among the lower classes, the persons being either seamen, sponge divers, or shepherds.

a. On the islands of Calchi, Symi, and Tilo the houses are on or near the seashore. These places are salubrious, hilly, and dry.

b. The dwellings are very insalubrious, consisting of a single badly-ventilated room, with a water-tank underneath. All the family sleep together on the ground, which, however, is occasionally planked, and usually in the same garments they wear during the day; the streets are extremely narrow, unclean, and swarming with pigs.

c. Deficient personal cleanliness; rooms not kept clean.

d. Meals irregular, gorging meat when they can get it, but generally taking salt fish and bread dipped in the brine in which the fish is preserved, with roasted peas, dried fruits, mollusca, &c., on which they chiefly live during their religious fasts, of which there is one at Christmas and another at Easter of 40 days each, and one of a fortnight at the beginning of August. The men are much addicted to drinking.

7. Mental depression especially, often arising from the enforced separation from their families and friends, and being obliged to live with other leprous persons. Such is the importance attached by people here to the falling off of the hair, that I have seen a young man in Symi 24 years of age, who being naturally beardless was for this sole motive sent off to the island of Nimo, where the lepers are confined, although he was robust, healthy, and without the least alteration in the skin.

8. Hereditary in all probability.

In all cases but one that I know of, only one member of the family had been attacked, the others remaining exempt.

9. No reply.

10. The disease is entirely exempt from contagion or transmission even by sexual intercourse.

11. They may communicate freely until the disease attracts public attention; and then, without consulting any medical man, and even against his opinion, they are banished to a desert spot of the island, as in Halki, or to an uninhabited island, as at Symi, where they must build their own dwellings, and subsist in rags as they best can, by begging or otherwise.

12. There are no general or special hospitals in any of these islands. As for treatment, government takes no heed of the public health. I was even prohibited from examining closely those lepers from the island of Nimo who came to ask my advice, on the ground that I might catch and communicate the disease to other persons.

13. No leper is maintained at the public expense; they live on the charity of individuals.

14. It has been stationary apparently for the last 50 years.

15. No spontaneous cure has ever been known to take place.

The population at Symi is about 12,000, and the number of lepers on the island of Nimo is, if I remember right, about 300, but they do not all belong to Symi, as several from the surrounding islands take refuge there. The population of Halki is about 3,000, and the lepers are five in number, one living at Halki and the other four at Rhodes.

Consul Callander remarks that the above statement must be a mistake. "I cannot find "out the exact number, but from what I am told it would seem that there are not above 300 "lepers in the whole of this consular district. The lepers living in this island (Rhodes) are

" ten in number, and are in the same conditions in every respect as in the other islands of the " district."

17. As long as lepers are left in their actual condition, in a worse hygienic state than the remainder of the inhabitants, and when medical men must fight with the population to be permitted to examine the disease properly, and with the want of cleanliness, good food, suitable dwellings, and medical assistance, together with the apathy and indifference of the government as to the state in which these miserable people live, the disease will always remain in its present obscurity, and the profession must be satisfied with what information is found in authors.

No. 26.

SMYRNA, SCIO, MYTELLENE, AND SAMOS.

1. *Smyrna.*—Consul Blunt states that it has been very rare at Smyrna for the last 20 years. He is indebted for the following replies to the physician of the British Seamen's Hospital at Smyrna. There are two forms of the disease, viz., the anæsthetic and the tubercular. The former commences by the skin losing its colour and sensation in patches, the colour changing to white ; the latter by the appearance of tubercles on various parts of the body, chiefly the face, and often a certain degree of loss of sensation.

Scio.—Vice-Consul Billiotti, from information supplied by Dr. Barbiere, states that it has been known here from time immemorial, and is still seen sporadically. There are two forms ; the *humid* and the *dry*, varieties of one morbid state. In the former purple tubercles appear on the skin, chiefly of the face, which subsequently ulcerate, causing great deformity, and proving more rapidly fatal than in the dry form. There is usually aphonia with more or less loss of sensation of the skin. The characteristic feature of the dry form, in its advanced stage, is the falling off of the phalanges of the fingers and toes. There is often a general atrophy, so that the patient is sometimes so reduced as to resemble an Egyptian mummy.

Mytellene.—Vice-Consul Roboly states that it is endemic and well known. The tubercular and ulcerative form of the disease is that almost invariably seen ; it is the elephantiasis of the Greeks.

Samos.—It prevails extensively in this island. I have seen 80 cases of the disease. In one fourth, or more, of these cases there was no development of tubercles in the skin or elsewhere, but only, or chiefly, the mutilation of the extremities, associated with more or less extensive and complete anæsthesia. The loss of sensation is not, however, limited to this form of leprosy, as it is present in the tubercular form also ; this symptom may indeed be considered as characteristic of leprosy in general. I would call it, after the example of Dr. Hjorth of Crete, the " articular " form of the disease, if I was satisfied that the flexion of the phalanges was the effect of an articular lesion, and not rather, as I believe, of the shrinking and hardening of the flexor muscles and tendons. The appellation of " diérétic " leprosy might best express its most notable feature, viz., the separation or falling off of the members. In all the cases of leprosy, whether tubercular or not, which I have seen, there were two symptoms invariably present, viz., anæsthesia and a sense of inward heat or burning. The insensibility of parts is sometimes such that they may be burnt or cut without the patient being aware of it. From the distressing feeling of inward heat, there is generally a great craving for cool drink, &c. I regard the different forms as having a common origin.

*Dr. Mengozzi.**

2. *Smyrna.*—Generally after 30 years of age. It has been seen in a girl of 18 years of age, whose brother had died of the disease.

Scio.—Generally at about 18 or 20 years of age ; but where hereditary pre-disposition exists, as early as 5 or 7. In the humid leprosy the earliest symptoms are the falling off of the hair, and patches as of frost bites on the hands and feet, with more or less insensibility of the skin. In the dry leprosy, a slight impetiginous eruption on the arms and legs, or of small somewhat raised papulæ covered with a dry whitish crust. There is usually loss of sensation of the skin, which is especially smooth in the parts adherent to bones, and more or less numbness in the fingers or toes.

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* Gazette Medicale d'Orient, Avril 1861.

Mytellene.—Generally at the age of from 8 to 15 in the hereditarily pre-disposed. The earliest symptoms are the swelling of the extremities, with constitutional weakness and depression, and weakness of the circulation.

Samos.—There is very generally a precursory stage of ill-defined constitutional disturbance, with or without febrile symptoms, before the characteristic symptoms appear.

3. *Smyrna.*—I have not met with any one of the medical men of Smyrna who has followed up a single case to its termination. The disease is chronic, and its progress very slow.

Scio.—In the humid form about 30 or 35 years of age; it is fatal at or about 50 or 55. Dry leprosy is often compatible with old age.

Mytellene.—Its progress is usually very slow. Sometimes, however, hectic fever comes on in the early stage of the disease, and the patient dies in a few months.

4. *Smyrna.*—In equal proportion apparently.

Scio.—There seems to be very little difference in this respect.

Mytellene.—In equal proportion.

5. *Scio.*—Here there is only the white race, with the exception of a few negro families who live in the town, and the men act as porters.

Mytellene.—The disease exists only among the Greeks. The Turks are exempt.

6. *Smyrna.*—Principally among the poor.

a. Place or district appears to have little influence.

c. Idle; very dirty.

d. Low and bad food. Olives, oil, and bad bread, which may contribute to originate the disease.

Scio.—Almost exclusively among the poor labourers in the country.

a. It prevails quite irrespective of locality, whether high or low, &c. The inhabitants (non-leprous) of places where lepers exist often enjoy excellent health.

c. Very dirty almost brutally so. They live in miserable hovels, seldom put off their clothes, and exposed to all atmospheric vicissitudes.

d. Food bad; of indifferent bread, rancid olives, salt and often tainted fish, and vegetables with oil, &c.

Mytellene.—Mostly among the poor.

a. The locality where it prevails most is elevated, and about two leagues from the coast. It is dry and stony.

c. Dirty; they seldom wash their bodies.

d. Food principally of dried vegetables, with bad olive oil, olives, salt fish, &c.

e. Peasants or sailors.

7. *Smyrna.* Bad food, and general mal-hygienic conditions.

Scio.—The conditions stated above, together with exposure to cold and damp, checked perspiration when heated, &c.

Mytellene.—Poverty with insufficient and bad food.

8. *Smyrna.*—Yes, without doubt.

Scio.—It is absolutely so.

It is very common for one member only of a family to be affected. Several cases of leprosy in a single family are rare.

Mytellene.—The children of leprous fathers and mothers are almost always sooner or later affected. Cases of the disease in a healthy family are very rare.

Samos.—Yes, certainly. The form of the disease transmitted to offspring is not always that of the parent. One child may be affected with the tubercular form and another with the articular or diérétic form, the father or mother having the tubercular disease. This fact alone shows that tubercles are not a necessary or essential feature of the morbid state.

9. *Smyrna.*—I am informed not.

Scio.—There is no such connexion.

Mytellene.—It is a disease *sui generis.*

10. *Smyrna.*—I am assured it is not, although believed to be so by the people generally.

c. No; a leprous mother may give birth to apparently healthy children.

Scio.—There is no ground whatever to believe that leprosy is contagious, although a vague belief of the kind is prevalent among the common people.

c. No.

Mytellene.—It is demonstrably not contagious. Dr. Bargilli practised inoculation in two instances, but without results.

11. *Smyrna.*—Lepers are compelled to leave the locality where they have resided.

Scio.—Lepers are forced to leave their families, and congregate together in a place by themselves.

Mytellene.—As at Scio.

Samos.—As at Scio.

12. *Smyrna.*—None whatever.

Scio.—There is a place set apart for lepers, called in Greek *lovo chori*, village des lepreux, and consisting of a few detached cottages, in which one or more patients live upon alms, furnished by the municipality or by private persons. There is a small chapel, and also a few fields in which those who are able may work, if they choose. No medical man ever visits them.

Mytellene.—Lepers live in beggary, and are subjected to no medical treatment. They do as they please, and society takes no heed of them. The district of Plumari, however, where the lepers are most numerous, maintains a village of about 50 houses, in which the lepers are lodged and fed at the expense of the commune and by the legacies of the pious. The population of this district is about 1,000, and the present number of lepers is 60.

13. *Scio.*—From 35 to 40 in the above-mentioned locality. From 5 to 10 die yearly, and their places are filled up by new admissions.

Mytellene.—At present the number in the island is about 200, of whom nearly all are mendicants.

14. *Smyrna.*—Forty years ago there was a makallah or parish here full of them; but for the last 10 or 15 years they have all disappeared, in consequence of the better food, clothing, and hygienic condition of the people.

Scio.—No increase or otherwise has taken place within the last 50 years.

Mytellene.—The disease is probably on the increase, from the liberty given to lepers to marry.

15. *Smyrna.*—I learn that the disease is always fatal.

Scio.—Rare cases of spontaneous cure, in a very early stage of the disease, are said to have occurred by removal to a climate quite different from that where the disease originated, as Wallachia, Moldavia, or Russia. A man 28 years of age, son of a leprous mother, and having four brothers younger than himself, all leprous, left this island on the earliest appearance of the disease for Constantinople, where he lived four years. Last spring he returned apparently quite well; but, being then obliged to return to work in the fields, within three months he became quite leprous.

16. *Scio.*—The population of Scio is from 65,000 to 70,000 souls.

17. *Scio.*—The district which furnishes the greatest number of lepers is the northern, which contains from 15 to 20 villages, with a population of from 15,000 to 20,000. The district is mountainous, the air pure, and the water abundant and wholesome; but the inhabitants are poorer and worse off than the rest of the population, and more exposed to frequent atmospheric vicissitudes. The repeated and long fasts of the Greek religion, occupying almost half of the year, must contribute to the development of the disease among a people so badly off as the Greeks. Among the Turkish peasants, whose life is less laborious than the Greeks, leprosy is extremely rare, although the two live in the same villages. The former practise frequent ablutions, use more animal food, and little, if any, salted fish. There still remains much to be ascertained respecting the nature and causes of this terrible disease, of which medical men are so ignorant.

Samos.—Dr. Mengozzi urges the necessity of governments providing suitable asylums for the reception of persons affected with leprosy, as the condition in which these unfortunates are at the present time left is a disgrace to humanity.

No. 27.

CRETE.

Consul Graham-Dunlop states that Ismail Pasha, the governor of Crete, (who is himself an educated physician, having studied seven years in Paris,) introduced him to the acquaintance of Dr. Brunelli, a licentiate of Padua, and employed at the time in researches respecting the leprosy in the island; he furnished replies in Italian to the queries, and directed attention to a memoir of Dr. Hjorth (formerly sanitary physician of Crete) in 1857, and a report thereon addressed to the Imperial Society of Medicine in Constantinople.

1. Yes; and from time immemorial. The lepers distinguish themselves into three denominations:—"stumpy" or mutilated (the original Cretan Greek word means a stump of wood), "rotten," and "spoilt," the local word being applied to milk as the lepers apply it to their

blood. They are all varieties of one common morbid state, as the symptoms of each can often be traced in the same individual.

1st form. Pallor and dryness of the face; partial paralysis of the facial muscles; irregular circulation in the extremities; loss of the fingers and toes; anæsthesia, more or less extensive; sores on the soles of the feet; stained patches of the skin, &c.

2d form. Knotty tubercles of red colour or of the colour of the skin; circular tubercles of an inch or so in diameter, occasionally confluent, and forming an indolent insensible tumour, several inches in size. They appear on the face and on the extremities, also in the mouth, tongue, and throat, impeding swallowing and breathing. These and other forms of tubercles may either suppurate outwardly or internally, or may remain long unchanged; or the disease may pass into the first form, with contraction or mutilation of the fingers.

3d form. General redness in the face, with slight elephantic swelling thereof, and flat tubercles an inch in size, which are more or less insensible; also ulceration in the mouth, loss of voice, and falling in of the bones of the nose and palate. The different forms of the disease of leprosy may be reduced under the heads of the "nervous" and the "vascular." *Dr. Brunelli.*

Dr. Hjorth recognizes three principal forms, according as the disease primarily affects the pituitary membrane, or the skin, or the small joints. They are only different forms or degrees of the same morbid condition, and the various symptoms are often united in the same patient at an advanced stage of the disease. In the first form, or that of leprous coryza, the mucous membrane, cartilages, and bones of the nose, palate, and throat are chiefly the seat of a destructive ulceration. The second or tuberculous form is characterised by the eruption of large papules or tubercles on the face, especially on the ears, point of the nose, chin, and lips; they appear also on the sclarotic, the tongue, and the extremities. They are often long stationary; at other times they suppurate, and if they heal they leave a puckered white cicatrix. Together with a chronic erythematous swelling of one or more of the extremities, there is often a numbness or insensibility to cold, while heat causes a painful pricking of the integuments, which are often covered with spots or blotches of a deep red colour. In the third or articular form, the phalanges of the toes and fingers become ulcerated and ultimately fall off. In some cases, the destructive process involves the greater part of the foot. Neither the brain, heart, nor other vital organs are almost ever affected.

Leprosy is called in the Turkish language djudam or meskin; by the Cretans khalassi or komagra, and lepers khalasmeni, komeni (gatés, coupés). The principal forms seen in Crete may be classed in three groups. 1. The knotty, tuberculous or elephantine, the leprosy of the Arabians; 2. The squamous, or leprosy of the Greeks; and 3. The white, tzarath or leprosy of the Jews. These forms are, however, often blended and combined in one patient, so that it is difficult to dissociate them. The earliest symptom is generally some alteration in the integuments of the face, accompanied at first in some cases with an excessive sensibility or hyperæsthesia, to be afterwards followed by a more or less complete anæsthesia. Swelling and ulceration of the nasal passages and of the lips, with tuberculous enlargement of the selerotic and cornea, as well as of the eyelids, ensue, causing much disfigurement and distress. At the same time, or previously, the extremities are usually the seat of divers morbid changes of structure, with disordered or impaired sensibility, and ultimately of ulceration and loss of the phalanges of the fingers and toes, &c. In some patients, the disease appears chiefly in the form of excessive tumefaction of the extremities, or of scattered nodosities or hypertrophic hardenings of the integuments of the body. The "bouton de Crete," analogous to the "bouton d'Alep," is one of the manifestations of leprous disease. The cerebral and organic functions are usually unaffected. *Dr. Mongeri* (formerly Sanitary Physician of Crete).*

2. Every age is susceptible, but especially that between 15 and 40. *Dr. Brunelli.*

It is only among the Jews in Crete that I have ever observed the symptoms of leprosy in infancy or early youth. The disease seldom appears before puberty. *Dr. Mongeri.*

3. If it begins in infancy, it is very slow of development; if in maturity, it is less so. In the first form, lepers may live 50 years or more; in the second and third forms from 15 to 25 years. The first form ends with spasmodic symptoms; the other two with dysentery or apoplexy. *Dr. Brunelli.*

Leprosy is essentially a chronic disease. Ten or twelve years often pass before the disease is fully developed. Sometimes the symptoms cease for a time, more or less lengthened; afterwards to resume its course. Many patients attain an advanced age. I

* Gazette Medicale d'Orient, for July 1861 and January 1862.

have seen a leper between 70 and 80 years of age, whose general health was not much affected. *Dr. Hjorth.*

4. More frequent in males. *Dr. Brunelli.*

5. It makes no distinction in races. *Dr. Brunelli.*

In its developed or aggravated form, it is much more frequent among the Greek population in Crete than among the other inhabitants. The form of the disease generally seem among the Moslem population is that of the "bouton d'Alep," known in Crete by the name of khaniotico. *Dr. Mongeri.*

6. Among the poor chiefly, but not exclusively. It is favoured apparently by great mental depression, chills, and other causes occasioning rheumatic ailments; but often no cause whatever can be assigned. It prevails independently of the physical geography of the place, of the water drank, or of the sanitary condition of the locality. The ordinary diet consists of beans and barley, &c., with some meat, partly salt pork and salt fish. They consume large quantities of olive oil, also a good deal of wine and spirits (rakei).

Shepherds, agricultural labourers, and masons are more subject to the malady. *Dr. Brunelli.*

Dr. Hjorth, who considers that bad diet is one of the principal if not the main element in the development and aggravation of leprosy, remarks: "In consequence of the numerous "fasts of the oriental church, coupled with the neglect of agricultural pursuits, the Cretan "peasant seldom or ever makes use of fresh meat, butter, or fresh vegetables, with the "exception of some of inferior kind. Their food consists of a large quantity of bad salt "fish, barley bread, and of an enormous quantity of olive oil, often rancid, which they will "drink like water. In many places there is a want of good water; it is often brackish, "and in the mountain districts, from which a large number of the lepers come, it is derived "from the melting of the snow." He points to the analogy in the diet used by the inhabitants on the coast of Norway, where leprosy is so prevalent, with that of the Cretan peasant, with this difference only, that the oil so largely consumed is in the one case animal, and in the other vegetable.

Dr. Mongeri confirms the statements and appears to agree in the opinion of Dr. Hjorth, that the large consumption of semi-putrid salt fish and pork, coupled with the total neglect of personal cleanliness, has much to do with the development of leprosy. During the frequent fasts of their church, the poor Greeks live almost entirely on vegetables and oil, often of a bad quality.

7. The exciting causes before mentioned. *Dr. Brunelli.*

8. It is mostly hereditary. Cases of one member only in a family being affected are rare; often all are more or less leprous. Of 122 lepers, the disease appeared to be hereditary in 76 cases and spontaneous in 46. *Dr. Brunelli.*

It is generally hereditary. The father more likely to give the disease to the offspring than the mother. Sometimes both parents are quite healthy, but the uncles or aunts have been affected with the disease. Usually several members of the same family suffer; but I have met with cases where one or two members only were leprous, while all the rest were healthy. There are exceptions upon all these points. *Dr. Hjorth.*

9. Although there are certain symptoms in some individuals, in the first stage of the disease, resembling those of syphilis, it is not connected in any way either with that or any other malady. *Dr. Brunelli.*

10. There are 127 persons, who have all lived together healthy among lepers for many years; for this reason, the lepers in the Canea leper quarter do not themselves consider that the disease is contagious.

c. Not in Crete; because, excepting in one case, persons united in mixed (i.e., healthy and leprous,) marriage live for 10 to 20 years together, and having children, without the healthy person being attacked. *Dr. Brunelli.*

Dr. Hjorth does not consider it contagious, and doubts whether cohabitation will produce it.

11. All persons affected are expelled from their town or village immediately it is known or suspected, and are sent off to places set apart for them. These are six in number, and consist of a series of stone huts built generally in the plains. Often healthy persons live with their leprous relatives in these huts; and, on the other hand, many lepers remain in their native villages, particularly among the Turks, who refuse to be expelled, and are not afraid of contagion. *Dr. Brunelli.*

12. One kilogramme of bread is the nominal daily allowance by government to each leper; but they live chiefly on charity, haunting the public roads. They are not admitted into special houses or hospitals; in fact, none such exist in Crete. *Dr. Brunelli.*

Whoever walks out of the gate of one of the large towns, especially on a Saturday, is distressed by the hideous sight of many of these unhappy beings sitting by the road side imploring charity. It is sad to behold the condition of these unfortunate people, and to think that, as soon as they are branded with the name of leper, they are driven away from parents, children, relatives, and friends; shunned like criminals, deprived of the power of earning their livelihood in an honest manner by their labour, and condemned to the degraded state of beggars. *Dr. Hjorth.*

13. It may be calculated that 300 lepers reside in the six villages assigned to them, and that 200 remain secreted in their houses. *Dr. Brunelli.*

Dr. Hjorth calculates that there are not fewer than 1,000 lepers in the island, either confined in the leper villages or living in their homes.

14. Probably stationary, with a tendency rather to increase. *Dr. Brunelli.*

15. Lepers are never medically treated in the leper villages. In a few rare cases in this town (Canea), benefit has been derived from a light diet, bleeding, and an antiphlogistic regimen. No case of spontaneous cure known. *Dr. Brunelli.*

Dr. Hjorth believes that it may be reasonably hoped to cure the malady in its precursory stage, and even to arrest its progress at a more advanced period, provided a radical change in the diet and general condition of the patient be insisted on. Without this, all medication must be useless.

16. Dr. Hjorth states the population of the island to be about 200,000. Consul Dunlop estimates it at 300,000.

Dr. Mongeri puts it down at about 240,000, of whom 60,000 are orthodox Greeks, the rest being Mahommedans, Jews, and a few Europeans.

17. The localities most affected are (1.) Deviacki, a village of 300 small houses in a wide plain, a short distance from the sea, in the eastern half of the island, in which there are 18 lepers still residing; and (2.) Aivasides, a district in the south of the island, containing five villages, with about 600 small houses, on an elevated mountain chain, where 32 lepers are still living. Many marriages take place in the leper villages between healthy and diseased persons; it is generally the husband who is diseased. There exists a day school for the children, kept in the house of a schoolmaster, himself a leper, who has a diseased wife, and a healthy daughter married to a healthy husband. The school is attended both by diseased and healthy children. *Dr. Brunelli.*

Dr. Hjorth gives details of 27 cases of the disease examined by him, and mentions the extreme difficulty, in consequence of the superstitious abhorrence of it in Crete, of a medical man prosecuting any minute inquiries. He himself became an object of repugnance, from his professional examination of the diseased. His object in bringing the subject before the Imperial Academy of Medicine of Constantinople was the hope of pressing it on the attention of the Turkish government, as it is well known that large numbers of lepers are left to their fate, not only in Crete but in many other parts of the empire.

Dr. Mongeri describes briefly an incomplete dissection he made of a leprous case at Canea, one of the principal towns in Crete. The patient was upwards of 50 years of age, had been in the lazaret for 30 years, and had lost all his fingers and toes. The body was extremely emaciated, with the exception of the head, the scalp and face being enormously swollen from tuberculous enlargement. The integuments of the body were hard, coriaceous, and covered with brown prominent scales. When these were detached, numerous tubercular elevations, not visible during life, were made apparent. The larynx externally was twice its normal size; the *rima glottidis* was occupied with a mass of tubercles of various size; the mucous membrane of the larynx, trachea, and the bronchi was extremely pale. There was much bloody serum in the thoracic cavity; the right ribs were carious; those on the left side were not affected. The lungs were profoundly diseased. The stomach and intestines were very pale, and numerous tubercles were found in their tissues. The omentum, mesentery, and the abdominal parietes were so loaded with these deposits as to resemble the "ladrerie" in swine, a very common disease in Crete.

No. 28.

IONIAN ISLANDS (Corfu, &c.).

1. It is known in Corfu, but is rare; it appears principally in villages in the mountainous parts of the island, more rarely in the towns and in the plains. There are three forms, viz., Willan's lepra, tubercular leprosy, and elephantiasis. The tubercular is the most common,

and shows itself in small tuberous swellings on the forehead, backs of the hands, and the extremities, with fœtid secretions from the nostrils, voice nasal, nares covered with tubercles, which gradually extend over the face, the extremities, and ultimately the whole body. The tubercles ulcerate, the features are frightfully altered, the phalanges become disunited, and the hands and feet are contracted.

Elephantiasis attacks chiefly the lower extremities. The integuments become swollen and hard; raised and rough pimples appear, and here and there sores break out, having a greasy aspect. The veins become knotty and indurated, and frequently gangrenous sores are formed.

These two forms of disease, viz., tubercular leprosy and elephantiasis, are only different phenomena of the same malady; in the latter the cutaneous cellular tissue is more affected, whilst in the former all the textures are attacked, and especially the venous system.

Proto-medico.

Tubercular leprosy has long existed in the Ionian islands. Dr. Dellaporta described it at the end of last century as he saw it in Cephalonia. I have seen it at Faraclata and Erisso, in Cephalonia; at Karussades, St. Duli, and Leptimo, in Corfu; and also in Zante. It is known under the name of Λέπρα. During the 15 years I have practised in the Ionian islands, I have at all times met with cases of the disease.

At first the patients exhibit, especially on the face and the extremities, smooth, shining, and oily-looking spots, of a yellowish colour, verging to a brown or livid hue. The affected parts, sometimes sensible, at other times insensible, or with an exaggerated sensibility, are swollen as if œdematous, and there is loss of the hair.

These spots are succeeded by tubercles of various sizes, at first solid, and afterwards of a pasty or soft consistence, with a reddish livid aspect. As the disease advances, the tubercles attack other parts of the body, as the pharynx, larynx, nasal fossæ, &c.

These tubercles are occasionally more or less completely dispersed; but more frequently they give rise to sanious ulcerations, which cause destruction of the parts, and more or less considerable mutilations. The ulcers are sometimes covered with a thick crust, and when this falls off deeper ulcers are found beneath. Hoarseness of the voice; deformity of the nose, causing a hideous aspect of the countenance; mutilations; a foul smell; diarrhœa, more or less constant; perversion of the taste and smell, often with complete loss of these senses, and also of vision; wasting of the whole frame, with much mental and moral wretchedness. Such are the distressing accompaniments which afflict the sufferer before death.

As a variety of the disease, I have noted in a patient in the village of St. Duli in Corfu the oily, yellowish, insensible spots, on which bullæ, containing a fœtid sanies, had formed. Destructive spreading ulcerations had followed upon the bullæ, but without the formation of any tubercles on the skin. *Dr. Tygaldos.*

There are, I am informed, several cases of tubercular leprosy in the remoter parts of the Ionian islands, though I have never seen them. I had, however, during long service in the Madras Presidency, ample opportunities of studying this disease in the practice of my friends, but I never knew of a case in any of the European regiments to which I was attached.

Dr. Innes, Deputy Inspector of Army Hospitals.

2. The earliest symptoms in tubercular leprosy are the small tuberous swellings on the forehead, the change of voice, and the nasal secretion; and in elephantiasis, tubercles on the feet, followed by œdematous swelling. *Proto-medico.*

In my experience the disease has generally commenced after 16 years of age.

The earliest visible symptoms are the shining of the face, and the appearance of spots on the skin. Occasionally these symptoms are preceded by great general weakness, despondency, and inability for work. One patient, whose parents were quite healthy, told me that the disease began after an inflammatory fever caused by taking a cold bath. *Dr. Tygaldos.*

3. In adults, generally 6 or 8 years after the first symptoms; in some rare cases after 3 years. Many individuals die from want of means of subsistence after the third or fourth year; others have lived on to 50. *Proto-medico.*

4. According to my experience, the proportion has been one fifth in females and four fifths in males. *Proto-medico.*

Leprosy is much more frequent in males. In my notes I find 17 cases among men to 2 among females. *Dr. Tygaldos.*

5. There is only one race, the white. *Proto-medico.*

6. Among the labouring classes, and chiefly in mountainous districts (Oros).

The houses are badly constructed, and exposed to the inclemencies of the weather. The windows are not glazed, and the walls generally defective. The people, chiefly agriculturists and shepherds, are dirty in their persons; their food, Indian corn, frequently dry and musty,

with herbs and garlic. When their harvest is good they indulge in wine, spirits, and dried cod fish; but, when bad, they are frequently in want of the common necessaries of life.

Proto-medico.

With one exception, all my cases have occurred among peasants, and without one exception among the poor and miserable. I have seen some lepers in villages situated on more or less arid hills (Cephalonia); others living in swampy clayey localities (Lepkimo in Corfu); others residing in calcareous districts (Karoussades in Corfu), in low, damp, ill-ventilated, and ill-lighted dwellings, surrounded with heaps of putrescent filth. At Zante the diet of the lepers I saw consisted chiefly of wheaten bread, at Cephalonia of barley bread, and at Corfu of bread of Indian corn*, with vegetables, olive oil, salted fish, but rarely any fresh meat.

Dr. Tygaldos.

7. Sufficient data are wanting. *Dr. Tygaldos.*

8. I cannot say. *Proto-medico.*

I have seen several cases which make me believe in the hereditariness of the disease; but all the members of a family are not usually affected, and I know three families in which one member only was attacked. *Dr. Tygaldos.*

9. The common lepra of Willan is often connected with syphilis; but the tubercular disease and the elephantiasis are not so. *Proto-medico.*

Syphilis has nothing to do with leprosy.

There exists in Epirus in Lower Albania another affection, commonly called Σπυρουωχον, which belongs to the syphilitic family, like the radesyge. I have met with two cases only of the disease, one in Cephalonia, and the other in Zante. Both were cured with the ioduret of potassium. *Dr. Tygaldos.*

10. The general opinion here is that it is contagious after a lapse of time. Two instances I have met with substantiate this opinion. In one family three of the members were attacked, first the father, whose malady was far advanced with ulceration, when the wife became affected, and the son, who was born a year before the father was attacked, also caught the disease, by sleeping in the same bed with his parents. In another family the husband was first affected, and three years afterwards the wife was attacked.

Proto-medico.

I have never been able to recognise the contagiousness of leprosy.

Women have often lived with leprous husbands without contracting the disease.

Dr. Tygaldos.

11. As Proto-medico, I have frequently represented the necessity of a separate asylum for lepers, but want of means has hitherto prevented anything being done. Persons, however, always avoid them, as they believe that communication is dangerous. *Proto-medico.*

No sanitary care is taken of lepers in the Ionian islands; and if they generally remain secluded within their dwellings, it is only to avoid being objects of disgust to their fellow creatures. *Dr. Tygaldos.*

12. They are not admitted into the general hospital. The Government makes (no?) provision for the poor attacked, and they are left in their own houses. *Proto-medico.*

Nothing is done for their relief; they are left to their misery and sufferings.

There has never been any asylum for their reception, and I am not aware if any succour is ever given them in their own dwellings. *Dr. Tygaldos.*

No provision is made, I believe, in the Ionian islands. *Dr. Innes.*

13. None at present.

14. It has not increased. *Proto-medico.*

15. In two instances I have checked the progress of the disease by changing the patients' mode of living, and by the use of arsenical remedies. I have never perceived a spontaneous cure. *Proto-medico.*

Lepers rarely apply for medical advice or assistance. *Dr. Tygaldos.*

16. By the last Census in 1860 the population of Corfu was 72,967.

Since 1841, medical certificates are furnished to the health department, agreeable to the instructions in the codes of the Ionian states on this subject, and a regular register is kept in the office of the civil magistrate, where the particulars of births and deaths are inserted.

Proto-medico.

17. At present there are 10 cases of leprosy in the district of Oros, and 8 others in other districts, principally in hilly situations, at a distance from the town.

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* At Corfu, where the peasants always eat maize bread, I have seen within the last four years several cases of pellagra.

I have observed in some post-mortem examinations that the tissues generally were attacked, and principally the venous system, more particularly in elephantiasis. In one case, where death resulted from pneumonia, the crural, femoral, and iliac veins exhibited knobby appearances, and, on being opened, the deposit of a caseous substance resembling tubercular matter.

Proto-medico.

The only writing on the subject I know of is the memoir of Dr. Dallaportà. (Dissertazione sull' Elephantiasi che s' incontra negli abitanti dell' isola di Cephalonia. Venezia, 1851. Giornale Veneto di Scienze Medicale).

Bad hygienic conditions and hereditariness are, in my opinion, the causes of the production and continuance of the disease; and therefore it is that Government should take under its protection the leprous poor, provide a suitable asylum, where good food and proper medical attention might be had, at the same time that marriages between them should be interdicted.

Dr. Tygaldos.

No. 29.

SALONICA.

1. Consul Wilkinson states that leprosy, though rare, is known in the consular district of Salonica; but under the general term, three distinct diseases, having no affinity with each other, are included, viz., the common squamous lepra, the elephantiasis of the Arabs, distinguished by the enlargement and thickening of the integuments of the extremities, &c., and the elephantiasis of the Greeks, or proper leprosy. The two former are extremely rare. The last-named is endemic on the sea coast of Macedonia and Thessaly, and is known under the name of λωβη (injury).

It is characterised by the appearance of tubercles on the skin, which subsequently ulcerate, and cause great disfigurement as well as mutilation of the fingers and toes.

2. Between the ages of 15 and 30.

3. No information obtainable.

4. More frequent among males.

5. Observed in the white race only.

6. Among the lower orders.

a. In rural districts, situated in hilly and dry places on the sea coast.

b. Good.

c. Personal cleanliness on a par with that of the inhabitants of the interior, where leprosy is unknown.

d. Principally vegetable diet and salt fish.

e. Agricultural.

7. No information procurable.

8. Yes; a whole family, the mother excepted, composed of six individuals, whose father had been leprous, and died of the disease.

9. It has no such connexion.

10. I cannot record any such instance.

c. It does not seem so.

11. They are not; segregation is enforced.

12. None. The leper is forced to live apart in a separate place provided by his relatives.

13. None.

14. The disease is very rare, and does not seem to have increased or diminished.

15. Two patients in the first stage of the disease are said to have recovered under the use of ioduret of potassium and arsenic, with cauterisation of the ulcers.

16. No reply.

17. The disease is entirely confined to the peninsulas of Cassandra and Longos, and to the coast of Thessaly.

No. 30.

MONASTIR.

Consul Calvert states that the disease is unknown in his consular district, which immediately adjoins on the inland to that of Salonica.

BOSNIA SERAI.

Consul Holmes states as the result of his inquiries that "leprosy does not exist in this part " of Bosnia. A German physician in the Turkish service called Vely Bey, better known " at Vienna as Dr. Gaal, who has resided more than ten years here, informs me the disease " exists in Dalmatia under the names of 'mal di fiume,' 'falcadiné,' and 'scherlievo;' and " that it may possibly be found in Bosnia on the Dalmatian frontiers."

BUCHAREST.

Consul Green states, that "Dr. Mawer, a member of the royal college of physicians, one of " the physicians of the Brancovano hospital of this city, informs me that no case of leprosy " has ever come to his knowledge in Wallachia, and that, according to the principal " medical men in Bucharest, the disease is unknown in this country."

VARNA.

Consul Luter states that Dr. Charles Roll, who has practised medicine in Bulgaria for 22 years, and is a graduate of the university of Vienna, has never seen or heard of a case of leprosy and that the other medical men whom he spoke to made a similar statement.

No. 31.

DARDANELLES.

Acting Consul Mr. Fraser states, "within this province the disease is almost entirely " unknown, and no precautions are taken in respect of it."

BRUSSA.

Consul Sandison states, that he is informed by the two chief medical men there, one of whom has been a resident for 25 years, that leprosy has been quite unknown in the district during that period. There was formerly a sort of hospital in the city for lepers, who were usually strangers; it is now utterly neglected, and only occupied by a few infirm and other poor. If any leprous persons made their appearance in Brussa, they would be liable to segregation. Consul Sandison adds that, "in my recollection, leprous beggars were common " at Smyrna, understood to come, most or all, from the island of Scio. The medical men " in Brussa state that the disease is endemic also in Mytilene and Samos, and in some other " islands on the Turkish coast to the south."

SAMSOUN.

Consul Barker states that the disease is occasionally, but rarely, seen in isolated cases in his consular district. He hears that it is not known generally in the towns of Asia Minor, but that at Kupren, a large village about 20 hours from Samsoun, and in some of the adjacent villages, cases have been known. The Turks designate it "Judam-ata" or the Jews' disease. It is supposed to be caused by bad food, and that the use of maize bread predisposes to it. It is generally hereditary. Mr. Barker has known a case where it passed over one generation

and reappeared in the grandchildren. Occasionally, one member only of a family is diseased It is always considered to be highly contagious; men, however, have been known to live many years with leprous wives without being affected. Leprous persons are kept apart from the rest of the community.

No. 32.

CONSTANTINOPLE.

1. Consul-General Cumberbatch states that it is very uncommon amongst the native population of the district, and cases so seldom fall under the observation of scientific medical men that it is impossible to obtain categorical answers to the interrogatories. The following information was communicated to him by Dr. De Castro of Constantinople:—"With the "exception of the cases in the leper asylum at Scutari, the 'tzaraath,'* or leprosy of the "Old Testament, (which Dr. De Castro considers to have been the disease now described as "Greek elephantiasis,) is very rarely seen in this city. It is called by the Turks 'miskine,' "by the Arabians 'djouzam.' It always commences by general or partial anæsthesia of the "skin, and by copper coloured spots on various parts of the surface, especially the face. These "spots subsequently become discoloured tubercles. There is generally hoarseness of the voice "and falling off of the hair. The tubercles afterwards ulcerate, destroy the tissues, and "cause mutilations of the extremities. In some cases the anæsthesia is the only symptom "present. The tubercular and anæsthetic forms are only varieties of one disease. The first "is the most common."

2. It is very rarely seen before the 10th year. Once only has a child been seen at birth covered with the leprous tubercles, the offspring of leprous parents.

3. No specific or definite answer can be given.

4. At present there are more leprous men than women in Constantinople, but the proportion is not uniform.

5. The cases seen at Constantinople occur among the Turks, Greeks, and Jews. No case has been observed among the Armenian poor, although they are subject to the same hygienic conditions as the poor of other races.

6. Chiefly but not exclusively among the poor.†

a. Most of the inmates of the leper asylum at Scutari are from the Asiatic coasts of the Black Sea, and some districts one or two days distance from the coast; and those seen at Constantinople are chiefly from the islands of the Archipelago.

7. No information.

8. Yes, certainly; yet it often appears spontaneously. Sometimes one member only of a family is affected; at other times several.

9. I have not.

In the discussion of this subject at the Imperial Academy of Medicine of Constantinople, on April 5, 1861, it was stated by some of the members that there is every reason to believe that leprosy has often been confounded with papular and tubercular syphilitic eruptions.

10. In almost all cases no contagion has been observed; but in a few, related by me in the "Gazette Médicale d'Orient, Mai 1861," the transmissibility in this way was, I think, certainly proved.‡

11. They may communicate freely in Constantinople, but they usually live apart, as they are objects of aversion.

12. The lepers at Scutari are not medically treated; they are only sheltered and fed by the authorities. None but Mussulmen are admitted there; those of other races are received into their respective hospitals. The few cases which occur in the army are received into military hospitals, and mixed with the other patients.

The asylum at Scutari, situated in the middle of the cemetery there, contains 20 small apartments, badly furnished, and still worse lighted.

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* Λεπρα of the Septuagint.

† Dr. De Castro relates, in the Gazette Médicale d'Orient for April 1861, several cases of tubercular leprosy among the Jewish population of Constantinople. The patients were not poor or destitute; some of them were in easy circumstances.

‡ The evidence addueed by Dr. De Castro, in respect of these eases, was discussed at a meeting of the Imperial Academy of Medicine of Constantinople, and was considered far from being conclusive by several of the members.

13. The number of lepers in the asylum at present is 30. 15 men and 15 women, married among themselves, and all the offspring of healthy parents. Of these marriages the children born in the asylum, are as yet healthy. The eldest child is 12 years of age. Of the above 15 men, six are 25, two 30, three 40, one 45, and three 55 years of age. The females are somewhat younger.

14. During the last 20 years, leprosy has somewhat diminished; cause unknown.

15. I am not aware of any case of cure, spontaneous or otherwise. Some lepers live to a considerable age. The disease seems to be arrested after having produced mutilations of the extremities.

16. No information.

17. There is no document respecting the leprosy as it has been seen at Constantinople, where it is extremely rare; nor has there been any necroscopic examination of the disease.

No. 33.

TABREEZ.

Mr. Consul-General Abbott, in forwarding the following replies, remark:—"In a country "where there are no statistics of disease, no hospitals, no public provision for the relief of "suffering of any description, and where the native faculty are an ignorant set, wedded to "the strange theories of the east respecting disease and the healing art, there exist but few "means of obtaining the information that is desired. I have no knowledge myself of the "disease, and I could discover no one among the natives who had.

"All classes have a horror of the complaint, and keep themselves entirely apart from those "afflicted with it, whom they mercilessly turn out of their homes, to live or perish, as may "be, by the highways, without any provision for their support.

"The only resource for information which could be of any value was in Dr. Cormick, an "English physician, who, in the course of a long practice in the country, has had occasional "opportunities of becoming acquainted with the disease."

1. Yes, in several parts of the province of Azerbaijan. It is of the kind called tubercular lepra, or in Persia jezam.

c. Disease sets in with great languor and depression, followed by numbness and formication in the extremities. The spots and tubercles then make their appearance on every part of the face, but especially the nose and ears; they are soft, round, reddish or livid. Subsequently they appear on other parts of the body. The face is puffed, the eye-brows and lashes fall off, the forehead is beset with tubercles, the lips become thick and shining, and the lobe and alæ of the nose much altered. After some years these tubercles inflame and suppurate, and discharge a sanious pus, that dries up and forms adhering black or brownish scales. The mouth, uvula, pharynx, and nasal fossæ are also attacked with tubercles; the pituitary membrane becomes inflamed, and secretes a purulent fluid, and ultimately the cartilage and bones of the nose exfoliate. The voice becomes hoarse, nasal, and is finally lost. The sense of smell becomes impaired, and ultimately lost.

Disease after long continuance very frequently causes the loss of toes and fingers, and even of the hands.

2. At all ages, but the youngest I have seen was about eight years. It does not however generally appear till much later.

3. No information.

4. Believes the disease to be more frequent in men than in women.

Mr. Consul Abbott expresses the same opinion as to the greater frequency of the disease in men.

5. No information.

6. Disease most frequent among the poor. Has never known a leper among the upper classes.

a. Is more frequent in rural districts where poor living and constant exposure to cold and damp are undergone. Is said by the consul to be especially prevalent in Zenjan, a small ruinous town in the north of Persia, situated in a dry sterile plain half way between Tabreez and Teheran. Exists also in other elevated dry districts with severe winters, but is believed by the consul to be unknown in the dampest regions of Persia, namely those lying on the Caspian.

b. The habitations in Zenjan are of the meanest description, and the inhabitants exceedingly poor.

c. The lower classes are very uncleanly in their personal habits.

d. The ordinary diet of the poor consists of milk, sour curds, cheese much salted, and bread. Dr. Cormick says cooked dishes are rare among them, and in some parts vegetable diet rarer still; probably salt is seldom used.

7. No information.

8. Yes, nearly always.

The Consul-General mentions the case of a soldier who had the disease badly. Of eight children, some born before, some after, the development of the disease in the father, only one inherited it, and he is supposed to have caught it at Zenjan.

Mr. Abbott adds, he is informed that children of diseased parents generally become leprous at five or six years of age.

9. Does not believe it is. Syphilis is rare in the villages of Persia.

10. Has met with no case of direct contagion, although disease is here considered very contagious.

a. Thinks the discharge from sores must be highly contagious.

c. Not always. Has seen several instances of the contrary.

11. No; as soon as the disease is known to have attacked a person, he or she is driven from the town or village to the highways, where the sufferer lives in a most pitiable condition, in wretched holes or hovels, depending entirely on the charity of passers by.

12. There is none whatever. There is not a single hospital or asylum in the country, nor is there any provision for the alleviation of suffering and distress.

13. Answered above.

14. No accurate information; but Dr. Cormick thinks, and it is the general opinion, that leprosy has been on the increase of late years.

Mr. Abbott remarks:—"Twenty years ago no lepers were seen on the road leading from "Tabreez to Teheran until one reached Zenjan; now at intervals along all that portion "of the road groupes of these people are found living as beggars. I believe that the "increased traffic on that line has attracted them from all other parts, without there being "necessarily an increase in the total number. Now, we cannot quit Tabreez by any one "road without encountering parties of lepers."

15. Believes the disease to be incurable in its confirmed state. At the commencement it may be arrested by generous diet conjoined with tonics. Sarsaparilla with bi-chloride of mercury is useful. Has seen great good in two cases from goat's milk whey taken of a morning, with generous diet and great attention to cleanliness.

A Persian physician states that, when there are sores, mercurial ointment rubbed on the body, with pills of corrosive sublimate, is useful in recent cases; that where there is no sore, there is no cure; that when sores show themselves the disease becomes contagious. Has heard of, but has not seen, spontaneous cures of this disease.

17. In the north of Persia the districts most subject to the disease are Khumsa and Hasht-rood, both elevated countries of mountain and plain; but there are no statistics of numbers.

No. 34.

CHINA, JAPAN, &c.

Hong Kong.

1. Saw the disease formerly at Canton, where it is not uncommon.

Leprosy may commence on any part of the body or extremities, but in general application is only made to the hospital when it attacks the face or other part liable to be seen. The first symptom spoken of by the Chinese is a feeling of cobweb stretched across the face. Has observed in many persons what might be called a leprous physiognomy. When the disease becomes visible, a dusky redness on a slightly elevated patch is usually the first external symptom, and it may manifest itself on any part of the body. It increases in size; other patches follow and spread. The toes and fingers swell, fissures and rhagades follow,

ulceration sets in, and after a longer or shorter period causes the extremities to drop off, and destroys life itself. The muscles of the thumb waste away at an early period.

This is the only real form of the much dreaded fatt foong or leprosy.

2. At all ages, from 9 or 10, to 40 or 50.

3. The duration of the disease varies exceedingly.

4. No information.

5. No reply

6. Most frequently observed among the poor, but has known cases of it among the upper classes, although kept as secret as possible by the latter.

a. Leprosy is frequent both at Macao and Canton.

b. Drainage of Chinese towns generally bad.

c. Chinese seem to be generally cleaner as regards washing than the same ranks in Europe.

d. Diet too poor, chiefly rice and vegetables; occasionally fish and pork may be added. Fish diet, especially shrimps, believed to excite leprosy.

e. Disease is found in persons of all occupations.

7. Reply indefinite.

8. Is considered hereditary in China, but all agree in saying that it dies out in the third generation. Has known a family for 10 years in which only one member, a boy, was affected.

9. No reply.

10. No, and the Chinese do not seem to consider it so.

c. It is considered to be so transmissible by the Chinese. Relates, however, one case strongly opposed to this view.

The Chinese always look upon it as the result either of hereditary descent or of sexual intercourse. The common expression of "selling the leprosy" arises from the idea of its being communicable by a woman to a man or *vice versâ;* and women will, if there is any symptom of the disease upon them, try to dispose of it to a healthy person by having sexual connexion with him. A go-between in marriage has to take the greatest care in her inquiries, as she may be made responsible should the disease appear after marriage. The dread of this scourge no doubt exerts a great influence on promiscuous intercourse in China, and on the general moral conduct of the people.

11. No reply.

12. There are villages set apart for lepers in the neighbourhood of Canton; in other parts, there are in many villages two or three huts set apart. No hospital, except one at Macao, kept by the Portuguese.

13. No reply.

14. No reply.

15. Has seen iodine, arsenic, and mercury tried without beneficial results. An oily nut called the chaulmoogra, or tai-foang-tsze, is used by the Chinese as a remedy, but only in a few cases of young persons was any benefit observed to follow. The Chinese sometimes try removal to a cold climate, such as Pekin, but they tell me without permanent advantage.

17. No reply. *Dr. Dickson.*

1. No lepers in Hong Kong, but large numbers at Macao, to which place they crowd from China, because they are well treated there.

a. Several different forms of leprosy in Macao called by the Chinese lai, that is, "scaly itch," and ma-fung or fak-fung, *i.e.*, the medical and civil word for the worst form, be it tubercular or ulcerative.

b. Cases of chronic scaly skin diseases, such as pityriasis and psora, are popularly confounded with leprosy at Macao. Both tubercular and anæsthetic leprosy are met with at Macao.

c. Lepers have a swollen, flabby, lymphatic appearance, chiefly in the face, and exhibit on various parts of their bodies those dusky-red, livid, or rather discoloured tubercles, which are the distinguishing characteristic of tubercular leprosy. Has not however once seen these tubercles in the sharply circumscribed form usually delineated. The first suspicion of the disease arises from a change of pigmentation in a small part of the skin, of a bright red

in the white, and a more dusky or livid red in the dark complexion; while in old cases in persons of very brown skin the tubercles are whitish, probably from want of blood in the inactive corium. In old cases the discoloration generally pervades the whole surface, but in exceptional cases the parts exempt from tubercles exhibit a comparatively healthy colour. The tubercles are neither cutaneous nor sub-cutaneous, nor are they moveable, but are simply an increased thickness of the cutis, generally of an ovalar form, never exceeding two inches in length, and invariably decreasing towards the outlines; the surface of these degenerated parts is covered with whitish or brownish epidermis cells. The usual seats of tubercles are the face, chiefly the skin above the eyebrows, the cheeks, the ears, much less the extremities. In the feet the dorsal side is the most frequent seat of the disease, the skin being sometimes altered to a large extent, rigid and rugous.

In the anæsthetic form of leprosy there is more general debility, with inactivity of the skin, and contractions of the toes and fingers. Ulcerations of the contracted toes often occur, beginning at the nails, and causing the loss of either the whole toes or of one or two phalanges. When the sores heal up the nails often remain intact, attached to the stump. This anæsthetic form of leprosy seems to supervene on primary tubercular leprosy. The hair generally falls off from whatever part of the skin is affected with tubercular leprosy.

2. At all ages from 5 years upwards.

3. No reply.

4. No reply.

5. No reply.

6. No reply.

7. No reply.

8. No reply.

9. Relates a case in which possibly syphilis and leprosy co-existed.

10. No reply.

11. They are. Leprous beggars being tolerated in all the most frequented roads of Macao, there would seem to be no restrictions imposed in respect of them.

12. There is an asylum for lepers at Macao, the Santa Casa della Misericordia, endowed 200 years ago for the reception of an unlimited number of leprous poor; but now the funds only afford maintenance for 22 gratuitous inmates.

It is called the Hospital di S. Lazaro, and is situated outside the city of Macao. The building is of brickwork, old and decayed, one story high, simply divided into three or four wards, with a verandah in front. It is surrounded by a brick wall and two enclosures, neglected courtyards or gardens, that on the right being used by the female, that on the left by the male patients. Both the hospital and its gardens are in a dilapidated, ill-kept, dirty condition. No treatment appears to be attempted in this infirmary, which contained 15 females and 16 males, at the time of Dr. Scheteleg's visit, of all ages, from five up to 75 years. In one case the disease had commenced as early as five; in another as late as 62 years of age. One of the men aged 30 years had been 10 years in the hospital, suffering from anæsthetic leprosy, and had lost all his toes but two. The matron, Jacintha, aged 60 years, appears to have contracted leprosy in the hospital, where she had resided 37 years, the leprosy having commenced in the twenty-fifth year of her age.

A few private patients are admitted into the Santa Casa, besides those maintained on the foundation, at the expense of their friends and neighbours, who are generally anxious to pay anything rather than breathe the same air with a leper.

13. No reply.

14. No reply.

15. No reply.

17. No reply.

Dr. Scheteleg.

1. Leprosy seldom seen in the colony. Has observed lepra vulgaris, and another disease, much dreaded by the Chinese, presenting the following appearances; viz., general cachexia enlargements of the inguinal, axillary, and sub-lingual glands; gums and fauces much injected; slight ptyalism; also a peculiar bluish-leaden colour of the cuticle over the abdomen, and extending to the loins. The skin of the chest natural, with a well-defined line separating it from that of the abdomen, which is cracked in many places, and discharging a very offensive ichorous fluid.

3. No information.

4. Has examined, as medical officer of the West India Emigration depôt, during the last two years, 13,000 Chinese, 11,000 males and 2,000 females, of whom only five males presented the appearance of the skin disease described under interrogatory 1.

5. Has only observed the disease among the Chinese.

6. No information.

7. No information.

8. No information.

9. All the cases seen of the disease described by him presented unmistakeable traces of syphilis.

10. Can say nothing on the subject of his own knowledge.

11. There is no restriction preventing lepers from mixing with the healthy inhabitants

12. There is none at Hong Kong.

13. There are none.

14. Can form no opinion.

15. Relates a case of leprosy cured by him at sea in six weeks with nitro-muriatic acid, sulphur ointment, sulphur vapour baths, and generous diet.

16. Population of Hong Kong at the census taken December 31, 1861, was 119,321.

The population consisted of the following classes, &c :—

——	Men.	Women.	Boys.	Girls.	Total.
Europeans and Americans - - - -	1,012	271	134	140	1,557
Goa, Manilla, Indians and others of mixed blood -	1,186	65	20	13	1,284
Aliens, chiefly seamen and temporary residents - -	—	—	—	—	100
Chinese in employ of Europeans - - -	3,731	267	38	75	4,111
Chinese residing in Victoria - - - -	39,538	12,830	5,249	4,341	61,958
„ „ villages, &c. - - -	7,142	2,211	1,130	732	11,215
Boat population in Victoria - - - -	9 788	4,032	3,156	1,895	18,871
„ „ other than Victoria - - -	5,419	3,137	2,115	1,367	12,038
Emigrants - - - - - -	—	—	—	—	229
Persons living in mat sheds - - - -	—	—	—	—	2,508
Street coolies - - - - - -	—	—	—	—	5,000
Prisoners and vagrants - - - - -	—	—	—	—	400
	67,816	22,813	11,842	8,563	119,321

There has been a registration of births and deaths from the foundation of the colony; but I am not aware that the returns have been printed.

17. Leprosy is frequently seen at Macao and Canton.

Dr. Enscoe, Surgeon of the Seamen's Hospital.

Canton.

1. Leprosy prevails in Canton and in the two neighbouring provinces, Quag-si and Fukien in the south-west of China, but does not extend further.

This fact is considered by the Chinese to be accounted for by these being lower and more damp than the other provinces of China.

c. The first symptom of the disease is a red spot appearing either on the face, body, or legs; most frequently on the face. This spreads into a patch; sometimes these patches unite; in other cases they remain distinct and numerous. The integument of these patches is elevated, and feels thickened, is of a dull reddish hue, and looks stretched. The ears soon become swollen, thick, and permanently red. The affected part usually loses its sensibility, and, if the disease advances, the hair falls off from the eye-brows and head. The tendons of the hands and feet contract, and the skin ulcerates, and discharges a thin purulent secretion, In the worst cases there is much swelling, with loss of the toes and fingers by ulceration.

The Chinese profess to distinguish 36 different kinds, but confound with leprosy various other skin diseases, *e.g.*, lichen, psoriasis, scabies, and syphilis. (Quoted from the Chinese Repository and from the Transactions of the China branch of the Royal Asiatic Society, Part III., 1851–2.)

3. Leprosy does not appear to shorten life materially. Several old persons have been seen with the disease; and one 80 years of age is now in the lazar village at Canton, who has been there many years. Lepers are however so effectually excluded from society, from the fear of their infecting the healthy, that they are as among the dead; and this separation is so complete, and its consequences are so much dreaded, that persons becoming leprous are known very frequently to terminate their lives by opium, or by hanging or drowning themselves, for they say "to die is to become clean."

5. No information.

8. Leprosy is undoubtedly a hereditary disease. It is said to become mild in the third generation, and to run itself out in the fourth. The children of leprous parents are at once recognised by the coarse thickened expression of the features, a broad nose, large ears, and a dry shrivelled skin on the arms and legs. The Chinese never permit any marriages with the progeny of leprous parents. Its appearance in a family not supposed to have any hereditary predisposition or taint puts an effectual stop to all matrimonial engagements, and makes null and void all previous bonds of betrothment. The lepers themselves usually intermarry only with those of the same grade or type of disease; e.g., a leper of the fourth generation with no external appearance, but known to be of leprous origin, will only marry a woman who is in the same circumstances with himself. Their progeny is considered free from taint, and need no longer be secluded from society.

10. Cannot determine whether the disease is really contagious, but it is affirmed to be so by the Chinese, who regard it with horror. The law regards and treats it as a contagious disease.

11. Such persons are nominally secluded from society, but practically the poor are allowed to roam about as beggars, and the rich are exempted from confinement in the lazar house by payment of large bribes to the police. Leprosy, however, is regarded as so unclean and contagious a disease that the infected persons are banished by their families, who will not eat or live with them lest they also should become contaminated.

12. There is a lazar house in Canton, supported by the government, capable of holding several hundred persons. It is chiefly used as an asylum for poor outcast lepers, who receive daily small allowances of rice, but are at the same time allowed to roam the streets as beggars. There is also a part of the city appropriated for the residence of lepers who live and trade together, not daring to intermarry with others.

15. The disease is regarded by the Chinese as incurable. In two cases I have tried the effect of liquor arsenicalis, with alterative medicines and saline aperients, and as topical applications the white precipitate of mercury, blue ointment, sulphur, chloruret of sulphur, &c., in one case without any benefit, in another, that of a boy, with only temporary advantage.

17. The Chinese, like the Jews, speak of the leprosy as an unclean disease, and it is supposed to be a just retribution for past offences; hence lepers meet with no commiseration, no hand is extended to give them succour, and no heart is moved to alleviate their wretchedness; they are regarded with no other feeling than as objects of disgust and fear.

Dr. Hobson.

1. (Replies founded on information derived from a Chinese leper physician, and from the head men of the Canton leper asylum.) Leprosy is extensively prevalent throughout the province.

a. There are several forms; the worst is called ta-ma-fung, or great leprosy. Two others are known respectively as white spot and red spot leprosy. Other varieties enumerated by the Chinese are not considered by European physicians to be true leprosy.

c. Spots and patches of white or red colour on the face, hands and feet, or body generally; withering of the fingers, toes, and frequently of all the members; falling in of the nose, depression of the lips, distortion of the eyelids, and scaly brightness of the skin, are the distinguishing characters of the great leprosy.

The other forms, commencing with spots of red or white, which sometimes ulcerate, are popularly believed to merge in the great leprosy.

2. Cannot assign any particular age. The earliest symptoms are spots on the skin, and numbness of the subjacent flesh.

3. No specific answer can be given.

4. Thought to be most prevalent among the male sex, but the difference is in any case slight.

5. Not applicable to China, where but one race exists.

6. Among the poor. Bad living and exposure to weather.

a. The disease most frequent near the the seacoast, in low, damp, and malarial situations.

c. Cleanliness is unknown among the Chinese poor.

d. Poor diet is believed to have a predisposing effect.

e. Labourers and others much exposed to sudden changes of temperature are considered most liable.

7. No answer.

8. The disease is often hereditary. It is believed in most cases to run through four generations, after which the virus becomes exhausted.

9. It is a Chinese medical opinion that injudicious mercurial treatment for syphilis may induce leprosy.

10. Instances of contagion are known.

a. In an advanced stage with ulcerous discharge.

b. Has seen none.

c. The disease is believed to be most frequently transmitted by sexual intercourse.

11. Segregation, either voluntary or on the compulsion of friends, is practised to a certain extent; but there is no official restriction to free intercourse.

12. A leper asylum, founded by private benevolence, exists near Canton, and in most of the other ninety walled cities in the province. The Canton asylum is a wretched collection of dilapidated cottages, in which the utmost filth and squalor prevail. There are upwards of 900 inmates, females being slightly in excess. Each inmate receives a small pittance from government, and from 40 to 50 die annually, whose places are immediately filled up by others.

13. About 900 in the leper asylum at Canton; besides these, about 2,500 lepers are believed to gain a livelihood in Canton as beggars, ropemakers, or pedlars.

14. A Chinese quack doctor through whose hands about 300 patients pass annually states that the disease is on the increase, owing to the spread of prostitution induced by the vast augmentation of the military forces, and the disordered state of the country.

15. Leprosy is not known to undergo a spontaneous cure, and true leprosy is believed to be incurable by the head men of the leper asylum, although various forms of cutaneous disorders are cured under the name of leprosy by Chinese quack doctors. Among their remedies a seed brought from Siam, and called the ja fung tze (lucraban seed ?), is considered the most efficacious.

16. No information.

17. Leprosy prevails throughout the whole of the south of China, as far as the Yang-tze-kiang, which it seldom crosses. It is most common in Quang Tung.

Mr. Consul Robertson.

Shanghae.

1. Leprosy is common in the district around Shang-hae, and occurs in the province of Kiangsee; commences with one or more dusky-reddish shining patches on the forehead, nose, or legs; the skin seems tense, and has the look of being varnished; patients sometimes complain of weakness and languor; the appetite seems impaired; the tongue slightly furred; sensibility of affected part at first increased, but after from one to three months diminished. In the course of a short time, soft, livid, slightly prominent, indolent tubercles appear and spread over different parts of the body. Indolent, slowly corroding ulcers appear on the lower extremities; the skin becomes thickened and hard. After some months the whole skin presents a full and puffy appearance; the lips seem much thickened; the nose flattened; the nostrils dilated; the teeth become loose; the gums tender and ulcerated. The expression is peculiar, and the senses appear more or less blunted. The general health suffers little, and patients ordinarily continue their employments, unless very laborious, throughout the progress of the disease.

In third stage of disease, parts of the face, neck, and arms are ulcerated; the lower eyelids are everted; the bridge of the nose is broken down; the palate is destroyed; the fingers and toes drop off, and the whole body appears a mass of corruption.

a. This, the only form of leprosy in this district, is called mo-fóng. The outward forms or manifestations of leprosy are very different in Canton from what they are at Shang-hae.

b. These several forms or outward manifestations are, in my opinion, essentially varieties of one common morbid state; the same causes, i.e., poverty, bad food, dirty habits and dwellings, operating to produce all; only at Canton the disease assumes the tropical form, which is modified by the temperate climate of Shang-hae.

2. Has seen the disease commence at the ages of 17 and 46. The most common age is from 22 to 38.

3. Disease appears to be fully developed in from one to two years after the first symptoms, when as a rule it remains stationary for several years. Dr. Henderson never saw a patient who had had the disease more than 18 years, nor one with the disease over 50 years of age.

4. Of 75 cases seen by Dr. Henderson, only four were women; and of these only two were well marked cases.

5. No reply.

6. In this province leprosy seems entirely confined to the lower classes. Has seen three cases in Buddhist priests.

a. The country for 30 miles round Shanghae is flat, the soil alluvial, the climate damp and relaxing. The country is intersected by small ditches and canals, and there is much stagnant water, with many paddy fields. Leprosy not more common on the seacoast than inland.

b. The dwellings are mere hovels, all on the ground floor, which is not elevated. They are essentially dark and damp, many of them formed of bamboo and mud.

c. Personal and domestic habits extremely filthy; indeed a majority of all classes affected with some sort of cutaneous disease.

d. There can be little doubt that bad, insufficient, ill-prepared, food is the chief cause of leprosy. The food of the people consists chiefly of rice and vegitables; the lower classes eat large numbers of small crabs which abound in the ponds and ditches; what animal food they have seems ill-prepared, and they use very little salt with their food.

So far as Dr. Henderson has been able to learn, those affected with leprosy have been much exposed to malarious influences; have been insufficiently clad, never changing their clothes or removing them by night; have been living on bad stale food, any animal food they had being badly nourished, and often in a state of decomposition.

Opium smokers are numerous, but Dr. Henderson has never known one to have leprosy.

7. No reply.

8. Leprosy does not appear to be hereditary.

9. Leprosy does not seem to be connected with syphilis, yaws, or any other disease.

10. Has never met with an instance of the disease appearing to be contagious.

11. Persons affected with leprosy are permitted to communicate freely with the rest of the community. There is no restriction imposed, or segregation enforced, in respect of them.

12. There is no public provision made for the reception and treatment of the leprous poor in this district.

13. None.

14. Notwithstanding the suffering and privation in and around this district during the last few years, the disease does not seem to be on the increase.

15. Has only had experience of the results of treatment of this disease in a few cases. In two cases tried saline purgatives, iodide of potassium, and tincture of iron, for four months, with temporary benefit at first, but the improvement did not last. In one case tried arsenic without benefit, in another mercurial alteratives, which did mischief. Doubts much whether fully developed leprosy can be cured by medicine; believes, however, that it can be modified, and kept in check; but that more can be done in the way of prevention than of cure.

Leprosy as it occurs here dees not undergo a spontaneous cure.

16. No information.

17. No information.

Dr. Henderson,
Medical Officer of the Chinese Hospital.

NEW-CHWANG.

1. Leprosy is entirely unknown in the region surrounding the port of Newchwang, and as far as can be ascertained in the whole consular district, including within that term the whole of Manchooria and the eastern part of Eastern Mongolia.

Mr. Consul T. Taylor Meadows.

KIN-KIANG.

1. Leprosy is known only to a limited extent in this district as compared with the province of Canton.

P. J. Hughes, Vice-Consul.

KANA-GAWA.

1. Leprosy is said to exist in Japan, though little, if any, is seen within my consular district.

3. Is said to commence in children often at the age of 12 months, to be fully developed at the age of 30 years, and prove fatal.

4. Disease rare among women.

5. The distinction does not exist in this consular district.

6. In the poorer classes disease of most frequent occurrence.
a. Mostly urban, in low, damp, and marshy districts; less in hilly and dry districts.
b. The dwellings of the poor afford a mere shelter from the storms; not from damp or cold.
c. Uncleanly.
d. Diet of the poorer classes mostly consists of inferior fish, crabs, rice, sweet potatoes, common vegetables, and the poorest quality of saki (liquor).

7. Want of good diet, exercise, cleanliness. Living in unhealthy localities.

8. It often occurs that but one member of a family is known to have had the disease, though sometimes it breaks out at the third or fourth generation.

9. No certain information.

10. Disease not considered contagious by the Japanese. Persons in the advanced stages of the disease are considered unclean.
c. Disease seems not to be transmissible, except in its worst forms.

11. In the early stages of the disease, there is little restriction. In the worst stage, patients are often deserted, and sometimes left to perish.

12. There is no public provision for the poor, so far as can be ascertained.

13. Unknown.

14. Unknown.

15. No information.

17. No information.

Mr. Consul Vyse.

FORMOSA.

1. A few cases only.

2. Various.

3. Various. Is not fatal.

4. More frequent in men. 70 per cent. of cases occur in males.

5. No reply.

6. The very lowest orders.

7. No reply.

8. No reply.

9. No reply.

10. The disease appears to be not contagious.

11. No restriction is imposed. Lepers are allowed to marry at pleasure, whether with other lepers or unaffected persons.

12. None. There is said to be an establishment for them at Tai-wan-foo, the capital of the island.

13. None.

14. No reply.

15. No reply.

16 No reply. *Off. V.-Consul G. C. P. Blanne.*

No. 35.

AUSTRALIA.

Victoria.

1. Leprosy is known in the colony of Victoria, solely amongst the Chinese.

a. Under one form, "elephantiasis Græcorum," called by the Chinese fat-fung.

c. The distinguishing characters of the disease are:—tubercles on the forehead, ears, eyebrows, and face; bronzing of the skin on those parts; thickening of the eyebrows, eyelids, ears, nose, and lips; thinning and sometimes entire absence of hairs on eyebrows and eyelids. Tubercles in mucous membrane of mouth, nose, and fauces; anæsthesia of skin of arms and legs; cicatrices from former tubercles; and shining bluish spots on arms and legs, often as large as a crown piece, with ulceration on feet and hands, and loss of toes and fingers.

2. In this colony from the age of 24 to 45 years. The earliest symptoms were tubercles on the forehead and cheeks, and anæsthesia of the skin in different parts.

3. Attains its full development between 28 and 50 years. Within from 2 to 7 years. It proves fatal usually in periods varying from 5 to 10 years, and at different periods of life, from 35 to 55 years of age.

4. Has occurred only amongst males, there being very few female Chinese in the colony.

5. Occurs exclusively amongst the Chinese.

6. Invariably amongst the lowest orders.

a. Suburban and rural, inland, low and damp, usually among the diggers' holes of the mining population, but sometimes on the sides of hills where gold digging is carried on.

b. The dwellings are usually tents huddled close together near the gold fields.

c. The personal habits are uncleanly.

d. The ordinary diet is beef or mutton, and rice.

e. The occupation is usually gold digging.

7. Poverty and filth seem to aggravate the disease, or are supposed to do so; but in the prisons high feeding seemed to aggravate the disease; on a lower diet it did not make so rapid a progress.

8. Patients state that none of their relations have been affected with the disease. No instance of more than one member of a family being affected is known to have occurred in this colony.

9. Leprosy is not connected with or dependent on any other disease except syphilis, its connection with which is dependent only on the statement of persons affected.

10. No instance of apparent contagion has been met with in this colony.

11. Persons affected with leprosy are in this colony allowed to communicate freely with the rest of the community. They are, however, generally deserted by the other Chinese, it would seem rather from hopelessness of cure than from any fear of contagion, though they give their dread of contagion as an excuse for their inhumanity in deserting their brethren.

12. There are no separate infirmaries or asylums for leprous patients, but they are admitted into the general hospitals, the sanitary condition of which, as regards dryness, cleanliness, and ventilation, is good, and the arrangements for medical and hygienic treatment are excellent.

13. There are at present about 13 known lepers in the colony, among the Chinese population; but it is probable there may be others unknown. Ten of the 13 are maintained at the public expense, three in gaols and seven in hospitals,

14. Thinks the disease has diminished of late years, and that an increase of comfort and cleanliness among the Chinese has contributed to this.

15. Nearly every class of medicine has been tried, including baths, medicated and plain, but without much effect. Has found the disease increase rapidly under the prison diet, which consists of the following daily allowance, viz., maize or oatmeal 8 oz., bread 20 oz., fresh meat 12 oz., potatoes 16 oz., sugar 1 oz., and salt $\frac{1}{2}$ oz. When this diet was reduced, the disease did not progress so rapidly. The remedy that seemed to have most effect was the daily affusion of a large quantity of cold water over the head or parts affected. Under this treatment the tubercles on the forehead, and the thickening of the eyebrows, ears, and lips, diminished, but the patients being prisoners were discharged, and lost sight of after a few months.

There has been no instance of leprosy undergoing a spontaneous cure in this colony.

There has been no instance of recovery among the leprous poor treated at the public expense in this colony. Those treated in the hospitals died, and those treated in the prisons, who were all in an early stage of the disease, were discharged when their terms of imprisonment expired, with the disease somewhat alleviated, but by no means cured.

16. Population of Victoria, according to the census of 1861. was 328,651 males and 211,671 females; total 540,322 persons. There has been since 1853 a uniform registration of births and deaths, including the causes of death, throughout this colony. (Vide Appendix.)

17. Leprosy prevails most in the gold districts in or near the townships of Ballarat, Castlemaine, and Beechworth, the number of lepers and the population being respectively, in each district:—Ballarat, lepers three in hospital (all Chinese); population 34,458, including 2,612 Chinese. Castlemaine, lepers seven (all Chinese), four in hospital, three outside; population 26,764, including4, 482 Chinese. Beechworth, lepers, 1 Chinese in gaol; population 15,644, including 2,291 Chinese.

Two other lepers are in Collingwood Stockade Prison, sent thither from the gold fields.

Dr. M'Crea, Chief Medical Officer, Melbourne.

1. *a.* Leprosy is called by the Chinese fat-fung.

c. In all the cases seen the disease was matured, and though the symptoms varied in different cases, they were so unmistakeable as to be easily recognized. In all, the sensibility of the skin was more or less impaired. In some, the nose, larynx, and air passages became seriously involved as the disease advanced, and death seemed to take place by suffocation and exhaustion, while one or more attacks of pneumonia not unfrequently took place before the fatal result. In another class of cases, the disease seemed to develop itself more especially in the bones and joints of the phalanges of the fingers and toes; there were fistulous openings leading down to the diseased parts, and the bones became absorbed, so that one or even two phalanges sometimes were wanting; the soft parts contracted, leaving the fingers stumpy-like and short, but having the nail, and otherwise looking entire. In one case, where the disease had existed seven or eight years at least, one of the ancle joints was completely dislocated, the foot being turned inwards and the sole upwards, so that the individual walked on the ends of the leg bones.

In two cases now under my observation there is paralysis of one side of face, and the fingers are contracted on the palms. In one case the sight of the eye on the affected side was destroyed.

3. Is of opinion that in most of the cases the disease had commenced before they left China, but could arrive at no definite conclusion as to the length of time they had suffered from the disease.

5. Has seen only one case in a European, who had contracted it while resident in India.

7. Some of the sufferers attribute it to cold, &c.

9. Some of the sufferers point to syphilis as the cause.

10. Is supposed by the Chinese to be contagious.

15. The remedies tried were arsenic, Donovan's solution, cod liver oil, &c., but with little or no effect. Generous diet and cod liver oil seemed to improve many of them, and they

left relieved, but only to return after different intervals with the disease still wearing out the vital powers. Has not seen a single case of true leprosy (fat-fung) cured.

The following is the report of the only post-mortem examination which has been made.

Ye-lac, admitted December 2d, 1861, age 50, died May 5th, 1863.

Post-mortem appearance. Body extremely emaciated, skin of a tawny colour, dry and corrugated, something like a dried fish's skin; nose flattened from absorption of cartilage; small abcess round larynx; when the skin in front was cut into, matter welled out. Epiglottis and internal parts of larynx thickened. Mucous membrane denuded for some distance down the tracheæ. Aperture at the top nearly occluded. Heart empty; arterial system seemed healthy; lungs natural, with the exception of a limited deposit in upper part of each lung of a melanotic or tuberculous character. Liver healthy looking, and about natural in size. Gall bladder completely filled with gall-stones, 151 in number, smooth and polished, varying from a very small pea to a bean in size. Other organs normal. Brain not examined.

Mr. Hutchison, Resident Surgeon at Castlemaine Hospital.

New South Wales.

Dr. Bennett of Sydney states that he had seen the disease in India, and in the leper hospital at Singapore, but among the great number of the various cutaneous diseases that had come under his care during a practice of 25 years in this colony, he had not observed a single case of the true leprosy, elephantiasis græcorum.

A statement to the same effect is made by several other leading medical men in Sydney. No cases of the disease have ever been met with among the Chinese and other Asiatics admitted into the hospitals there.

Mr. Mason of Tenterfield, in the gold field district, describes a form of cutaneous eruption, consisting of small shining spots or tubercles of a livid colour, which often discharge a very offensive fluid, and are followed by silver-looking scales, which he has observed chiefly among the Chinese labourers engaged in mining. All the cases occurred in persons who had suffered from syphilis.

Mr. Redhead, of Braidwood, mentions that, about two years before, it was currently reported that several Chinamen in that gold district were affected with leprosy, to the great alarm of the white population. On examination, the disease proved to be an aggravated form of itch. Mr. Redhead adds that, when he was in Queensland in 1858, he saw several severe cases of yaws amongst the native blacks of that district, but none of leprosy.

Mr. Street, of Hargraves, mentions that he had seen the disease in Madagascar, and in the Seychelles islands, but never in New South Wales.

Mr. Hogg, long resident in India, writing from the neighbourhood of Sydney, states:—"A "few years ago there was a copious stream of immigration into this colony from China, "so much so, as to alarm the European population that they would soon be outnumbered. "The subject demanded the attention of Parliament, and a poll tax of 10*l.* checked the "immigration at once. As leprosy was known to prevail to a great extent over China, "the emigrants on arrival here were subjected to a searching examination by the port "surgeon, and instructions were sent to the various ports in China not to ship any persons "having a cutaneous eruption, or any appearance of leprosy. In this way the Colony has "been kept clear of the disease, which every one seems to dread." Mr. Hogg had, in a letter to a local journal in 1860, said:—"The subject demands the most serious and prompt "consideration of our legislators and the government as to the best means to be adopted to "guard us and the generations to come from the invasion of so loathsome and infectious a "disease as leprosy; or the time will come, as it did in the Mauritius (where the disease has "got into some respectable families, and, as in the east, spread over the country) when it may "be beyond our power to control or expel it. I would suggest that Chinese lepers be sent "back to their own country immediately on the disease being detected, and if necessary, "even at the public expense; and no Chinese immigrant should be permitted to mix with "our community having arrived with the disease or anything approaching to it, as "elephantiasis, herpes, psoriasis, &c."

According to the Census of 1861, the population of New South Wales (exclusive of the military, and of the crews of ships at sea, also of the roving aboriginals) amounted to 250,860. Of this total 12,986 were Chinese.

Since 1856, there has been a general and uniform registration of births, marriages, and deaths, including the causes of death: and an annual return is published at the Registrar General's office in Sydney (*vide* Appendix).

No. 36.

MAURITIUS.

1. It is very common in this island, but has been little studied by the profession. It appears in two forms, the tuberculous and the anæsthetic; these seem to be only varieties of one morbid state. The description of the disease given by Drs Danielsen and Boeck applies exactly to it as it is seen here. *Dr. Regnaud.*

Leprosy is very common in the Mauritius and its dependencies under every type, in the two main forms of elephantiasis Arabum and of elephantiasis Græcorum. These, in my opinion, are only varieties of one morbid state; one form may run into or be accompanied by another, and sometimes the various forms become blended in the same patient; they occur too in the same countries and localities, and under similar circumstances. In many cases of leprosy, the fingers and toes of the hands and feet drop off at the joints; and all the forms are generally accompanied with abscesses or ulcers, and frequently the body is covered all over with scales. *W. Ford* Esq., F.R.C.S., Health Officer.

It is very common, and occurs among all classes. There are two forms of the disease, the white and the black leprosy; the two are mere modifications of the same disease, due to the colour of the skin. The progress of the white form is slower than that of the black. *Dr. Bolton*, Government Medical Officer.

There are two kinds of leprosy in the Mauritius, the tubercular and the anæsthetic; they are, in my opinion, distinct forms of the disease. The anæsthetic form is marked by ulcerations under the joints of the fingers and toes, when exfoliation takes place; the finger or toe is shortened, often leaving the curious appearance of a finger or toe with a perfect nail and but one joint. *Dr. Powell*, Superintendent of Grand River Lunatic Asylum.

Leprosy here is characterized by tubercular swellings on the face, nose, forehead, and ears, the cartilages of the nose and ears being sometimes thickened by tawney discolourations of the skin, pervading the entire body, generally in patches. The discolourations are deepest over the tubercles. The hands and feet are peculiarly affected; the fingers, toes, and soles of the feet are the parts first attacked. The epidermis first becomes harsh and scaly, and then horny; it cracks, and fissures are formed from which a thin ichor is discharged. The ulceration extends deeper and deeper through all the tissues, bone and cartilage included. In this way the extremities of the toes and fingers literally rot off. As soon as a phalangeal joint is destroyed, the diseased action seems to arrest itself at this particular spot, and the extremity of the phalanx will remain attached to the member simply by a string of soft tissue, for an indefinite period; a source of great annoyance to the patient, until it is removed by the knife. And here I may remark, that amputations of all kinds (and I have performed many on lepers) heal with a rapidity rarely met with in healthy persons. Perversion and loss of cutaneous sensibility are frequent in the course of the disease. Cutaneous secretion is always much diminished; frequently almost entirely arrested. There is always more or less emaciation.

b. However much the symptoms vary in intensity and sequence in different patients, the disease is, I believe, in all cases one and the same.

Dr. Finnimore, Government Medical Officer, Grand Port.

2. The disease appears at every age.

The appearance of tubercles, or of spots not unlike, at first, those of urticaria, sometimes preceded, at other times not, by a longer or shorter period of feverishness. *Dr. Regnaud.*

At any age, from infancy to late in life. Medical men seldom see cases at their commencement; they are too often kept secluded. The earliest symptoms observable in the tuberculated form of Greek leprosy are disturbance of the general system, alteration and puffiness of the features, and discolouration of the skin, to be followed by the more advanced appearances.

In the Arabian elephantiasis the first symptoms are those of general disturbance, swelling with erysipelatous inflamation of some part of the upper or lower extremities, generally the latter, with fever, commonly called "l'erisipelle" in the colony. The first attack is curable, and may leave no trace behind; but similar ones recur from time to time with increased violence, until abscesses and ulcers form, and all the deeper seated tissues become implicated. *W. Ford* Esq.

Generally, I think, about the age of 10 or 12. The earliest symptoms are the appearance of discoloured patches on the skin, followed by enlargement of the lobes of the ears and of the alæ nasi; the nails assume a peculiar blue colour, and the ends of the fingers and toes enlarge, and acquire a soddened appearance, as if they had been macerated. As the disease advances, the throat and nares become affected, the fingers and toes drop off, and ulcers form in various parts of the body. *Dr. Bolton*

Generally in early youth; more especially after measles. The earliest symptoms are patches of discolouration, such as in England would be called "liver spots," which show a great want of sensibility. *Dr. Powell.*

By far the larger number of cases commence after puberty, and the ratio seems to increase as life advances. I have known one case where the disease occurred at nine years of age.

In one set of cases, the earliest symptoms are the tubercular swellings and cutaneous discolouration, followed by the other symptoms above described, in varying order and severity. This is the course I have invariably observed in patients of European birth or origin, as well as in those of African origin and mulattoes. In another set of cases, confined almost entirely to the Indian population, the true leprous symptoms are preceded by a peculiar affection of the nerves of the foot, indicated by an intense burning sensation; the general health frequently breaking down under it, and the patient dying of marasmus. I by no means consider this a symptom of leprosy, and still less that every patient suffering from it must necessarily become a leper; but I have so frequently observed that it is a precursor of the disease, that I cannot but think that it has an intimate relation to it, or, at any rate, that the causes which produce the two affections must be mutually related. Whether this symptom occur or not in this form of the disease, one of the first things observed is the induration of the skin on the soles of the feet; the skin cracks, and the same morbid changes ensue as described in the other variety. The disease gradually extends to the legs and hands, and the skin of the whole body becomes dry, scaly, and discoloured; but rarely do tubercles occur in this variety. Perversion or loss of cutaneous sensibility invariably occurs. *Dr. Finnimore.*

3. The period varies very much. I have known lepers live upwards of 30 years. In the anæsthetic form, I have seen the disease limited to the wasting of one arm for from 10 to 15 years without any progress of the malady or much disturbance of the health; others have lost several fingers or toes, the health still remaining good. The tuberculous form is rather more rapid in its course. Lepers die at every age, and after the greatest variety in the duration of the disease. *Dr Regnaud.*

Its progress is usually slow; most frequently it attains its developement at the period between full growth and middle life; sometimes cases linger on to old age. *W. Ford* Esq.

Generally before the age of 15. The duration of the disease varies much. *Dr. Bolton.*

Generally soon after puberty. It proves fatal after various periods, but usually between the ages of 30 and 50 years. *Dr. Powell.*

At whatever period of life the disease shows itself, I think about two years is the time usually occupied in developing itself fully; the progress is then generally rapid; but frequently the disease seems to remain stationary. *Dr. Finnimore.*

4 It is seemingly more frequent in the male sex. Out of 109 patients treated by me (58 at the Hospice St. Lazare) 83 were males and 26 females.

	———	Males.	Females.
1	At birth - - - -	1	—
4	Under two years - -	1	3
3	From 2 to 5 years - - -	3	—
4	From 5 to 8 years - -	3	1
6	From 8 to 14 years - - -	4	2
13	From 14 to 21 years - -	6	7
15	From 21 to 30 years - -	10	5
28	From 30 to 40 years - -	23	5
32	From 40 to 50 years - -	30	2
1	Of 65 years - - -	1	—
1	Of 68 years - - -	1	—
1	Of 69 years - - -	—	1
109		83	26

Dr. Regnaud.

I have seen more males affected than females, but probably the latter keep themselves more secluded. *W. Ford* Esq.

Both sexes are, I think, equally liable. *Dr. Bolton.*

Both sexes seem to me equally liable, but the general impression seems to be that it is more general among females. *Dr. Finnimore.*

5. The native population, black, mulatto, or white, are equally subject to it. Of the 58 patients treated at the Hospice St. Lazare there have been—

7 from the white population of the colony.
10 „ mulatto „ „
21 „ black „ „
7 „ Indian population born in the country.
9 „ Indian immigrants.
2 Chinese.
1 Irishman.
1 Frenchman. *Dr. Regnaud.*

It is greatly more frequent in the Asiatic and African than in the European or Caucasian races. The lower the race the more prone it is to the disease, and to the severity of its attack. I have seen leprosy in Egypt and Arabia, in India, Ceylon, in the Islands of St. Marie near Madagascar, in the Seychelles Archipelago, and in Bourbon and Mauritius, and I have met few cases of native-born Europeans affected; still they are liable to the disease after long residence in a country where it is endemic. In Mauritius and the dependency of Seychelles it exists in many white creole families, the descendants of Europeans. *W. Ford* Esq.

It seems more frequent among the immigrants from India. *Dr. Powell.*

It seems to me that all the different races are attacked in an equal proportion, with the exception of those of European origin. *Dr. Finnimore.*

6. It is equally prevalent in all ranks of society.

The only circumstances which have seemed to me to favour its development are—1. Residence in the most arid, least elevated, and the hottest parts of the island, and particularly on the sea coast. 2. The little use made of cold water, the want of cleanliness, and the weakening of the system by hot baths. *Dr. Regnaud.*

It is most frequent in the lower conditions of society, and on the seacoast of large countries and in small islands. *W. Ford* Esq.

It is most common among the poor black population, and its development is favoured by bad living and an hereditary taint. It is more frequent on the sea coast than in inland elevated localities.

d. Rice with salt fish and vegetables, with the occasional addition of a little fresh animal food. *Dr. Bolton.*

The Indians live principally on rice and salt fish, many of them entirely on rice and leguminous seeds, such as dholl, &c. The creole population live principally on rice, with more animal food than the Indians; they are fond of pork. Their habits are generally cleanly. *Dr. Powell.*

All conditions of society appear equally liable.

a It is more frequent near the sea coast than inland.

c Want of cleanliness no doubt favours its development; but I know cases where persons in the higher classes, Europeans, and with no hereditary taint, have been attacked. *Dr. Finnimore.*

7. Poverty, close unwholesome dwellings, want of cleanliness and pure air, unwholesome food, as too much of fish, and above all of pork, especially its grease (of which large quantities from pigs that feed on all kinds of offal are imported from Calcutta into Mauritius), tend to accelerate and aggravate the disease when manifested. *W. Ford* Esq.

Poor living and want of care. *Dr. Bolton.*

Low and deficient diet, intemperance, &c. *Dr. Powell.*

Bad food, unwholesome dwellings, and neglect of cleanliness. *Dr. Finnimore.*

8. Unequivocally so. Sometimes certain members of a leprous family appear to be exempt, but even they not unfrequently exhibit glandular lymphatic swellings, indicating a slight degree of or tendency to the disease; and the offspring of such persons frequently become affected. *Dr. Regnaud.*

It is undoubtedly often hereditary, but the offspring are not inevitably affected.

I have known such instances; also instances of several members of a family being affected; also instances where evety member of the family was affected, parents and children, in Mauritius and Seychelles, where I have resided 21 years. *W. Ford* Esq.

It is doubtless hereditary in almost every instance. In a case which recently occurred in a white young lady, whose parents and brother were free, the disease had existed in the maternal uncle. I know of another similar instance. *Dr. Bolton.*

Yes, undoubtedly. I have frequently seen one member only affected, but in those cases which were not hereditary. In hereditary cases I have seen all the children affected, and occasionally only one. *Dr. Powell.*

Most generally.

Yes. *Dr. Finnimore.*

9. I have not. In two cases, however, the disease declared itself at the same time with a syphilitic eruption. After the disappearance of the latter, the leprosy has continued. *Dr. Regnaud.*

I consider it a disease sui generis. *W. Ford* Esq.

I think not. *Dr. Bolton.*

No. *Dr. Powell.*

I believe not. Yaws, as far as my observation goes, are unknown in this colony. I am of opinion that some cutaneous diseases may degenerate into leprosy. I have a patient who some years ago began to suffer from hæmaturia, connected with an oxalite of lime calculus in the kidneys; after some time an eruption resembling lepra vulgaris, and described by Dr. Prout as occurring in the course of that affection, appeared; later, leprosy declared itself. *Dr. Finnimore.*

10. The two following cases have recently made me consider whether the disease may not be transmissible under certain circumstances. 1. A white man, affected with the anæsthetic form of the disease, had a fœtid ulceration of the heel. His wife, as well as myself, were in the habit of dressing this daily. She was probably less careful than I was in washing her hands after each dressing. A month after his death, a tuberculous spot appeared upon her right cheek, and within the next two months several other spots were seen over the body; since then, there can be no doubt that she has become leprous. It is now eight months since the death of her husband. 2. A black native woman, who had a child of five years of age by a former husband, married a black native affected with tuberculous leprosy. The child, who was much in the company of the husband, became affected with the same form of the disease. There was no traceable hereditariness in the family, either of this child's mother, or of the wife in the preceding case. *Dr. Regnaud.*

I have not. It might possibly become contagious under particular circumstances.

c. No; I know instances where it has not been so transmitted. *W. Ford* Esq.

I have not met with any such instances, but from what has come to my knowledge I believe transmission by contagion to be possible.

In the case of a boy aged 14, of European parents (the father from Kent, the mother Irish), who has been leprous since his seventh year, the father ascribes the disease to vaccination. I cannot discover if the child, from whom the lymph was taken, was of a leprous family or not. *Dr. Bolton.*

Never. I know two instances where medical men have wounded themselves in dissection, but without any bad results.

No. I know several instances in proof. *Dr. Powell.*

I have not met with any such.

c. No. *Dr. Finnimore.*

11. There is no restriction, except in the case of mendicant lepers found in the streets, when the police send them off either to the Lunatic Asylum de la Grande Rivière,* or to the Hospice of St. Lazare. *Dr. Regnaud.*

Formerly in Mauritius and its dependencies they were kept segregated; but for many years past, since the disease has been considered to be non-contagious, no restriction has been imposed. *W. Ford* Esq.

There is no restriction. Lepers generally shun their fellow men, but not always. They may be often met with wandering about. *Dr. Bolton.*

There is no restriction whatever. *Dr. Powell.*

12. An asylum was founded six years ago, under the name of Hospice St. Lazare, by the lady superior of the Sisters of Charity of the island. It is entirely supported by voluntary charity, and is not under government superintendence. Some of the patients, belonging to the well-conditioned families, maintain themselves in it. There are 52 inmates at present; when the hospice was founded, there were scarcely more than 12. I succeeded Dr. Koenig as medical attendant about a year ago; my services are gratuitous. *Dr. Regnaud.*

No public provision is made.

They are not admitted into the general hospital at Port Louis.

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* Lepers are no longer received into the lunatic asylum.
A. Gordon M.D., Chief Med. Officer, Civil Med. Dep.

An establishment for lepers—and their families in some instances—used to be kept by government on Ile Curieuse, one of the Seychelles, with a medical superintendent on the spot; but about ten years ago all the healthy persons were discharged, and the asylum gradually dwindled away, except for the poor of the dependency, with the intention of substituting for it a general hospital at Port Victoria, Seychelles, and a new leper asylum at Mauritius.

The asylum at Seychelles sometimes had above a 100 patients in it; it consisted of a number of small detached huts, with a larger one as a hospital for the worst cases, and a residence for the superintendent. *W. Ford* Esq.

N.B.—I am not aware that it is the intention of government to erect a leper asylum in Mauritius, nor do I think such an institution absolutely necessary, although it might be advisable to treat leprous sores in a separate or detached building. The greater number of cases of leprous sores are treated in the Hospice St. Lazare, under the superintendence of the Sisters of Charity. The disease I believe will be found to be hereditary, and neither contagious nor infectious; hence little benefit would be derived from complete isolation, unless marriages were strictly prohibited. *A. Gordon* M.D., Chief Medical Officer.

13. Very few, I believe, are so maintained in Mauritius and its dependencies.
W. Ford Esq.

14. In 1781, there were 12 white and 59 black lepers in the island, according to the official memoir of Drs. Deschamps and Rochard; since then no statistical inquiry has been made. The disease has spread more and more, and I am certain that there are at this time several thousands in the colony. During my practice for the last seven years, I have observed a degeneracy of the native population, attributable, I think, to a faulty hygienic condition, coupled with the debilitating influence of the climate. *Dr. Regnaud.*

It has certainly been on the increase during the last 15 or 20 years; but I do not believe more so than in proportion to the increase of the population. The large immigration from India, all over which vast country leprosy prevails, has also brought an influx of persons infected with the disease. *W. Ford* Esq.

Yes. In consequence of the increased immigration, the cases are much more numerous among the Indian population. *Dr. Powell.*

The general impression is that the disease is on the increase; but, judging from the statements of old residents, I do not think that it has made much progress during the last 25 years. *Dr. Finnimore.*

15. The daily use of cold baths, a nourishing diet, principally of milk, the use of flower of sulphur with the food, &c., have to me seemed to be of use.

In two cases of anæsthetic leprosy, where the patients have lost the phalanges of the hands and feet, the disease seems to have spontaneously stopped.

In two men about 30 years of age, one black, the other mulatto, there has been for the last five or six years an atrophy of the muscles of one hand and forearm, but without retraction of the fingers, and the disease has made no further progress. *Dr. Regnaud.*

Medical treatment seems to have been of only partial and temporary benefit. Due observance of sanitary and hygienic measures, together with the sufficient use of wholesome nourishing food, must be important in its treatment. As to a spontaneous cure, I should think such a thing in a true case impossible. *W. Ford* Esq.

I have found that good food, an airy dwelling, and the use of chowmogree oil, appear to render the progress of the disease slower, but nothing more. I never saw or heard of any case of spontaneous cure. *Dr. Bolton.*

In tubercular leprosy, the only treatment of any avail in the earlier stages is removal to a colder climate. In the advanced stages, alternate courses of arsenic and quinine. In the anæsthetic form or the joint evil, I have found great benefit from the continued use of quassia in doses of 10 grains twice a day; the ulcers become healthier, and heal and the patient frequently continues well for two or three years. *Dr. Powell.*

My own experience (of eight years) leads me to think that here the disease is never cured, but is sometimes, though rarely, arrested, under the continued use of the iodine of iron, and an infusion of a plant called bivilagna, of the order violaceæ, growing wild here, and reputed as a specific. I have observed in several cases the discolourations of the skin to diminish, the cutaneous sensibility improve, and the sores to take on a healing process.
Dr. Finnimore.

16. By the Census of 1861 the population was 313,462. The births and deaths are regularly registered, and the causes of death assigned by the relatives of the deceased, but without any medical certificate, except in the case of hospitals and prisons. *Dr. Regnaud.*

By the Census of 1861 the estimated population in Mauritius was 310,050, two thirds being Indians; and in the dependencies, where there are very few, if any, Indians, the population was 9,055, viz., in Seychelles 7,486, and in the other islands 1,569.

A general and uniform registration of births and deaths has long been kept; including the cause of death, since 1855. *W. Ford* Esq.

17. The disease is very prevalent in the capital, Port Louis, and also in Mahebourg, the second town of the colony, both on the seacoast.

I may mention that in two cases of white children, one seven and the other eight months old, both the offspring of leprous fathers, and both healthy and well formed, the vaccine vesicle did not appear until the 19th day in the one, and the 22d in the other, after vaccination. But in other similar cases no such delay has taken place. I add two official documents illustrative of the past history of leprosy in my native country, the Mauritius. (Vide Appendix.) *Dr. Regnaud.*

Animals (mammalia) are occasionally affected with leprosy. A young ox brought up at the Leper Asylum died of the disease some time since. A report of the post mortem examination of this animal was made by Mr. Olivier, veterinary surgeon, of Port Louis. *Dr. Bolton.*

The general appearances on post mortem examinations are those of tubercular disease of the internal organs. *Dr. Powell.*

I subjoin a copy of part of a report made by me, at the request of government in 1851, on the Leper Asylum at Seychelles, when it was proposed to reduce that establishment, and when I was government medical officer of that dependency. *W. Ford* Esq.

Report on the health and condition, &c. of all the inmates of the Leper Establishment at Ile Curieuse, Seychelles, on the 3rd August 1851.

Males afflicted with Leprosy.

Age.	Where from.	Residence in Asylum.	State.
About 60	Mauritius -	21 years	All the fingers and toes lost.
„ 60	„ - -	21 „	Loss of all the fingers; the feet diseased, and the right eye nearly gone.
„ 60	„ - -	21 „	Loss of most of the fingers and all the toes except the left great toe.
„ 60	„ - -	21 „	Loss of both fore-fingers, and all the toes except the great ones; two ulcers on the right foot.
„ 60	„ - -	21 „	Loss of the last phalanx of the left fore-finger and all the toes, except the left great toe; also the right eye gone.
„ 60	Providence Island	21 „	Loss of the last phalanx of the left thumb; the joints of some fingers affected. He is able to work a little in the garden.
„ 55	Mauritius -	21 „	Loss of all the left-hand fingers; the toes are affected.
„ 55	„ - -	21 „	Loss of nearly all the fingers and all the toes; an ulcer on the right foot.
„ 50	„ - -	21 „	Loss of the right hand to the wrist, and almost all the phalanges of the left hand; also all the toes.
„ 50	„ - -	21 „	Loss of several fingers of the left hand, and all the toes; ulcers on the legs.
„ 45	„ - -	21 „	The joints of the fingers affected; loss of all the toes; ulcers on the legs.
„ 55	„ - -	21 „	Right fore-finger affected; loss of nearly all the toes; ulcer on the left foot.
„ 46	„ - -	16 „	Loss of all the fingers and toes.
„ 51	„ - -	15 „	Loss of the last row of the phalanges of the fingers and thumbs; also of all the toes.
„ 55	„ - -	15 „	Loss of all the fingers of the left hand; some of the right hand are affected; ulcer on the left heel.
„ 55	Mahé - -	12 „	Elephantine enlargement of scrotum, and also of the feet and legs, which are covered with scales. He is in the Hospital. P.S.—This patient died soon afterwards.
„ 25	Mauritius -	10 „	All the joints of the fingers and toes affected; ulcers on the feet; large tubercles on the face and upper and lower extremities.

MALES AFFLICTED WITH LEPROSY—*continued.*

Age.	Where from.	Residence in Asylum.	State.
About 41	Mauritius - -	7 years	Disease of all the finger joints and of the nose; both feet swelled, with ulcers on the soles.
„ 40	„ - -	7 „	Ulcers on the feet and legs; disease of the phalanges and metacarpal bones; also of the nose and ears.
„ 36	Mahé - -	7 „	The joints of the fingers and wrists much diseased; the lower extremities swollen and scaly, with sores on both feet; the nose is also affected.
„ 24	„ - -	3 months	Swelling of the hands and fingers, some of the phalanges of which are lost; swelling of the feet and legs; numerous ulcers and tubercles on the face and ears; all the body covered with scales. This patient is in hospital and very ill.

MALES NOT AFFECTED WITH LEPROSY.

About 21	Mauritius -	- - -	Came with his mother, a leper, who died a few years since. Is quite well, and able to work in the establishment.
„ 16	- - -	- - -	Born at Curieuse, brother of preceding. Free from any disease, and quite able to work.
„ 19	- - -	- - -	Born at Curieuse. His mother, a leper from Providence Island, is dead. Is quite well and able to work.
„ 6	- - -	- - -	Born at Curieuse; is quite well.
„ 7	- - -	- - -	Born at Curieuse; is quite well.
„ 9	Mahé - -	- - -	Came with his mother, a leper, about four months since; is quite well.
„ 6	„ - -	- - -	Brother of preceding; is quite well.
„ 3	„ - -	- - -	Brother of preceding; is sickly, and has got the itch.

Diseased - - -	21
Not diseased - - -	8
	29

FEMALES AFFECTED WITH LEPROSY.

About 60	Mauritius -	21 years	Loss of all the fingers and toes; is much diseased, and is blind; is in the hospital.
„ 55	„ - -	21 „	Loss of all the fingers and toes; is blind, and in hospital.
„ 50	„ - -	20 „	Loss of all the toes, except the great one.
„ 55	„ - -	16 „	Loss of nearly all the fingers and toes; ulcer on the left foot; is in hospital.
„ 60	„ - -	14 „	Loss of both hands and of all the toes; an ulcer on the sole of the right foot. This woman has three daughters, who came with her, and have remained quite free of the disease.
„ 50	„ - -	14 „	Loss of the second and third phalanges of all the fingers and toes; an ulcer on the stump of the right foot.
„ 50	Mahé - -	12 „	Loss of all the fingers and toes.
„ 45	Mauritius -	14 „	Loss of nearly all the fingers and toes; a sore on the left hand and tubercles on the face and ears.
„ 36	Mahé - -	7 „	Loss of all the fingers and toes; ulcers on the legs and feet; body covered with scales; is in hospital, bed-ridden.
„ 30	„ - -	1 „	Loss of two rows of the phalanges of the hand; numerous tubercles.
„ 36	„ - -	4 months	Loss of nearly all the fingers and toes; elephantiasis of the feet and legs; disease of the nose and ears.

FEMALES NOT AFFECTED WITH LEPROSY.

Age.	Where from.	Residence in Asylum.	State.
About 24	Providence Island	21 years	Came with her mother, a leper, who is dead; is quite well.
„ 24	„ „	21 „	Has no disease, except slight psora.
„ 24	Mauritius -	20 „	Came with a diseased parent; is in good health.
„ 19	- - -	- - -	Born at Curieuse; her father and mother, who both came from Mauritius, died of leprosy; she is quite well.
„ 15	- - -	- - -	Born at Curieuse; is quite well.
„ 23	Mauritius -	14 years	Came with her mother, a leper, who is still living. Is quite well; employed in washing for the Asylum.
„ 17	„ - -	14 „	Is quite well.
„ 16	„ - -	12 „	Came with her mother, a leper; is quite well.
„ 7	- - -	- - -	Born at Curieuse of one of the leprous inmates; is quite well, except having psora.
„ 2	- - -	1 year	Came with her mother, a leper.

Diseased - - - -	11
Not diseased - - - -	10
	21

The following extract from the annual report of the civil commissioner of Seychelles, dated 16th February 1864, shows that the number of the lepers now at Isle Curieuse is very much reduced from what it used to be:—

"The principal ailments in these islands are dysentery, easily treated if taken in time, but "very fatal if neglected; and some very hideous varieties of cutaneous diseases, from leprosy "downwards. The number of lepers now on the books of the establishment at Curieuse is "only 5; but this is no criterion as to the actual amount of existing leprosy. In this country "it is always tubercular, and its development, though sure, is most insidious. Those "afflicted with it will never, in the earliest stages, allow that anything is the matter with "them; and cannot be persuaded to undergo a regular course of treatment at the hands of "the government medical officer. The dreadful result is only a question of time; but no "decided opinion can be arrived at here, respecting the rapidity of its progress, its "amenability to medical treatment, or its contagiousness. The latter, indeed, admits of so "much latitude of argument, that it is difficult to feel convinced that the fearful objects seen "here, with all the facial integuments eaten away, and with but sloughing remnants of "fingers and toes, are comparatively innocuous."

"I may mention, too, with reference to the opinion of the majority of medical men that "this terrible malady is not contagious, that Dr. Robertson, formerly in medical charge "of the Curieuse leper establishment, was himself an unmistakeable leper. The disease was "not in a very advanced stage, but of its presence there was no doubt whatever."

In his despatch, dated 15th March 1864, transmitting the preceding statement to the colonial office, Sir Henry Barkly, the Governor of Mauritius, remarks:—"My own expe-"rience in the West Indies furnishes instances similar to that quoted by Mr. Ward, in "which Europeans in constant communication with lepers have themselves become affected "with the disease, and I entertain no doubt myself that it can be conveyed in certain stages "to one, however healthy, who has any open cut or sore on his person."

No. 37.

CEYLON.

Leprosy is known in Ceylon. It is not an uncommon affection among the lower orders of the natives. I have seen it occasionally in Europeans and the burgher classes. The disease is commonly but erroneously put down as "lepra," and, I believe, it has been for years included under that head in the medical returns.

Leprosy is seen in two forms, the tubercular and anæsthetic varieties. Occasionally these two forms are found combined in the same patient. I believe they are only varieties of the same disease, depending upon one morbid action.

The tubercular form sets in with a shining and discolored appearance of some portion of the skin, attended sometimes with loss of sensibility; the discolored patches are afterwards found raised; they then become thickened and tuberculated, the tubercles generally appear on the ears, nose, fingers and toes. Suppuration ensues leading to contraction of the small joints, or these become destroyed by sloughing ulceration. A fatal diarrhœa generally terminates a miserable existence.

The anæsthetic variety is, I think, comparatively rare in Ceylon. It commences with impairment of general health. Vesicles form in different parts of the body which lead to destructive ulceration, attended with falling off of the hair and general emaciation. The articulating processes of joints sometimes become absorbed, leading to anchylosis. Diarrhœa is generally the fatal termination of this variety also. *H. D.**

The disease is frequently confounded in this country with elephantiasis, to which individual cases occasionally manifest some seeming alliance, though they are essentially different and distinct form of morbid phenomena.

(*a. and b.*) There are, in my opinion, four distinct forms of leprosy, having no affinity with each other, and which have never been known by me to run into each other, at any stage, but always to manifest a train of morbid phenomena, essentially different from each other, and to maintain their distinguishing characteristics during a whole lifetime, until some accidental or extraneous cause supervenes to close the scene of the sufferer, generally diarrhœa or debility.

1. *Lepra Tuberculosa* is characterized by tuberculous thickening of the skin of different parts of the body, in the form of irregular patches of a dark, livid, or dusky hue; the affected parts are smooth and glossy. The eyebrows, alæ nasi, and lobes of the ear, are invariably thickened and tuberculated; the lips are thickened. As the malady progresses, the fingers and toes become affected with painful paronychial swellings; deep-seated purulent infiltrations form under the tendinous sheaths which gradually end in sloughing ulcers discharging a fœtid sanies. The same thing occurs in the soles and heels, gradually ending in deep, callous, and fistulous ulcers. These are followed by necrosis, joints drop off from time to time, or have to be removed. There is often partial or total diminution of sensibility in the affected limbs, as well as on the spots or discolorations of the surface of the skin.

As the disease advances the voice becomes hoarse or husky. The tonsils frequently become affected with recurrent attacks of inflammation, and ozæna is almost always present more or less in the advanced stages.

2. *Lepra Nodosa* or *Anæsthesiaca.* This form of disease, not unfrequently met with in Ceylon, is characterized by what may at first sight be mistaken for gouty deposits and strumous articular enlargements of the hands and feet. It frequently commences with articular pains, sudden diminution of feeling in a part or whole of a limb, generally the lower extremities. Swellings form in the fingers like whitlows, which gradually ulcerate, the nails drop, followed by sphacelous ulcers which frequently eat away to the bone, and the joints fall off. The tendinous expansion of the palms becomes thickened and inflamed, producing permanent deformity and contraction of the finger across the palms.

In some cases, the fingers of both hands are only permanently contracted without any ulcers on them, while the toes and feet become the seat of suppurative inflammation and gangrene; the joints swell and become permanently thickened and deformed, and some of the joints drop off. Locomotion is considerably impeded, the legs cannot be thrown forward in walking, but can be easily flexed or drawn back, which produces a peculiar swaggering gait. Sometimes the most prominent symptom is the want of feeling or sensibility of one or both legs and hands, a kind of partial paralysis, which remains for life, while the sores heal up after some years. The countenance remains quite serene and natural, the general health is tolerably good, and all the animal and intellectual faculties are unimpaired. In the advanced stages of the disease the cutaneous surface is harsh and unhealthy.

3. *Lepra Squamosa.* This is characterized by uniform squamous patches all over the body, attended with frequent or periodical itching. It appears in small furfuraceous patches which gradually coalesce until the whole surface becomes uniformly affected. There is no diminution of sensibility; if anything, it is preternaturally augmented.

Locomotion is not impeded in the early, but only in the advanced stages. No swelling or ulcerations occur as in the last, nor any tuberculous enlargement of any part of the skin. The skin does not glisten as in the last form of disease, nor is there any lividity. The whole surface is, however, excessively sore and itchy, and as the disease advances, the cuticle becomes thick, inflamed, and fissured. The general health is impaired, occasional febrile attacks supervene, and the patient often becomes emaciated, and dies from exhaustion.

4. *Lepra Hebræorum*, or the white Jewish leprosy.—This form of disease is extensively prevalent in the island, particularly so in the North-western Province. It is characterized

* The names of the respondents are not given in full; the gentlemen belong to the Civil Medical Department; *vide* the Governor's Despatch in the Appendix.

by a peculiar marbled appearance of the skin. It generally makes its first appearance on the hands and lower extremities, and occasionally on other parts of the body, in the form of small white dots; which gradually enlarge and extend over the whole surface. It not unfrequently first shows itself on the lower lip, whence it spreads to the face. The hair on the affected parts becomes quite white from the very beginning of the disease. The spots are sometimes of a grey or dusky hue and often remain stationary for some time; but when they once begin to assume an active development, they rapidly extend so as to cover the whole body with large irregular white spots which deface the person very much. This disease appears to answer the description given in the Mosaic writings more than any other with which we are acquainted, the "Berat Lebina" or white leprosy of the Jews, and the "Berat Cecha" or the dusky Berat. Although this disease produces a striking singularity of appearance in its advanced stage, yet it does not cause any inconvenience to the patient. It is seldom attended with ulcers or other physical suffering or disability. *T. A. P.*

Yes.—The symptoms of this disease are that, in various parts of the body, the skin exhibits circular scaly patches, is thickened and elevated; and that, in process of time, the patient suffers from blisters in the fingers and toes, followed by ulceration. In a subsequent stage, excavated ulcerations appear in the soles of the feet, after which, exfoliation of the smaller bones in the diseased parts takes place.

There are several forms of this disease.

I am of opinion that they are varieties of one common morbid state. In one kind, the skin is thickened in different parts of the body, especially the soft parts of the face; the trunk and extremities have a glossy appearance, with fulness of the fingers and toes, in the joints of which the patient experiences a numbness to such an extent, that he often fails to feel a burning sensation on exposure of the diseased parts to the fire.

A *second* kind is distinguished by circular brown-coloured patches of the skin of various dimensions in different parts of the body, but more particularly on the trunk and extremities. They are not so much thickened and elevated as in the former; exfoliation, distortion, and contraction of the fingers and toes supervene.

There is a *third* kind, of which the only symptom is the whitening of the skin, unattended by any ulceration. Sometimes the labia of the mouth and the extremities are alone affected; at other times, nearly the entire body becomes white. This species is more common amongst the Singhalese than the two first kinds . *J.G.*

2. I have seen the disease in children and in adults; but, I believe, it is more frequently observed inm iddle age. Shining patches on the face and ears were almost the first symptoms that excited observation, and claimed treatment, in the cases I have met with. *H.D.*

Where the disease originates from hereditary taint, it manifests itself at all periods from infancy to adolescence, sometimes at middle age, and rarely after that time. When its cause is the result of a neglected and direct syphilitic contamination, it shows itself at all ages between puberty and old age, seldom after advanced life.

In the *Lepra Anœsthesiaca*, the earliest symptom is a partial or general diminution of sensibility in one of the limbs, and a feeling of numbness of the part, which last for months and sometimes years, without any other external manifestation of the disease.

In the *Lepra Tuberculosa*, the first symptom is a livid spot generally on the face or some part of the body; then thickening of the lower part of the lobe of the ear, the surface of which becomes irregular and tuberculated. The alæ nasi next become of a dusky and livid hue and gradually become thick and expanded.

In the *Lepra Squamosa* the first symptom is a glossy state of the skin with greyish discoloration, upon which lines drawn with the nails leave a whitish mark like that drawn on a slate with a slate pencil. The cuticle then becomes rugose and scaly, followed by frequent desquamations.

The *White Leprosy* commences with minute white spots, and the hair on the affected parts of the skin becomes quite white at the very commencement. *T.A.P.*

From youth upwards, at all ages.

The earliest symptom felt by the patient is a numbness in the fingers and toes, attended by a sensation described as that felt on being pricked with needles. *T. G.*

3. In about five or six years the disease attains its height; but in cases associated with scrofula and syphilis much sooner. Occasionally the disease remains stationary for years. After 10 or 12 years it generally proves fatal. *H. D.*

At the middle age the disease usually attains its full development; but a great deal will depend upon the period of life when the disease first shows itself in a given case. Its progress is at first very slow, though certain. It may take from one to five years to develop itself

fully; and from 5 to 10 or 15 years to prove fatal according to the severity, malignancy, and the individual form of the disease.

The anæsthetic form may last a whole lifetime, or to an old age, and the patient be carried off ultimately by some local affection unconnected with it.

The tuberculous form usually proves fatal within 8 or 10 years from its development, though some cases last longer. This form unquestionably proves fatal much sooner than the others here enumerated. *T. A. P.*

From its first appearance, several years elapse before it attains its full development; and it proves fatal in different stages, and at uncertain periods. *T. G.*

4. I have seen leprosy most frequently in the male sex. *H. D.*

More frequently in men than women,—in the proportion, say 1 to 30—in the cases under my observation in practice.

Men are more predisposed to it, on account of their being more subject to direct syphilitic contamination, at least in this country, than women. *T. A. P.*

More frequent in men than in women. Owing to the absence of statistics on the subject, I cannot state the proportion; but judging from the number of patients in the hospital of which I have the charge, I may state that men suffer from this disease in the proportion of 10 to 1. *T. G.*

5. I have observed the largest number of cases among the lower orders of Natives, Singhalese and Moors; a few among the Burgher class, and fewer still among Europeans. *H. D.*

It is unquestionably more prevalent among the black and coloured population than among the white; more frequent among the black or native races than among the coloured or Eurasian communities, and among the African and Arab tribes and their descendants than among the Singhalese or the original natives of the soil. During my experience of 26 years, I have not seen a single *European*, in the strictest sense of that term, suffering from the disease. *T. A. P.*

It is more frequent among the black than among the white and coloured population of this island. *T. G.*

6. Poverty, filth, damp, bad water, and whatever induces general cachexia, are circumstances, I think, that favour the development of leprosy when excited by a specific influence—malarial.

I have seen the disease more frequently on the Western Coast of Ceylon. In Colombo, its chief town, the native portions of which extend to the banks of the Kalany-ganga (river) which are damp, and at certain seasons decidedly malarial. I have not seen many cases on the hills where I am now stationed.

The sanitary condition of the dwellings of the mass of natives is very defective. They are constructed in a manner to foster disease, and consist of Cadjan huts, ill ventilated and greatly deficient in the means of removing the refuse of the inmates.

Natives practise ablution frequently and cannot be said to be filthy in their habits.

Their ordinary diet consists of boiled rice, vegetables cooked into curries, and curries made of inferior kinds of fish. Their occupation is that of the cooly or labourer. Many are artizans and cart-drivers. *H. D.*

It is more frequent in the maritime districts and the fishing coasts.

It is seldom seen in the inland and hilly districts; more in the urban than in the rural provinces. It is prevalent in the low damp and malarious districts, such as the Wanny Chilaw, Putlam and Negombo in the North-western Province; also in Balipitte, Modera, Matura, and Galle on the seacoast of the Southern Province. It is in Galle that elephantiasis (a disease somewhat allied to and frequently confounded with leprosy) specially prevails.

An entirely fish or salt-fish diet, and want of cleanliness, invariably occur among the natives who are subject to the disease. *T. A. P.*

It is most frequent amongst the lower classes. Bad diet and filthy habits seem to favour its development in individuals.

In Ceylon this disease generally appears in towns, and chiefly in Colombo, not from any unfavourableness in their climates, nor from their being "low, damp, or malarial," but, as I believe, principally from bad diet and filthy habits. *T. G.*

7. As leprosy is a blood disease, a cachexia leading to destruction of structure, all those conditions and circumstances which tend to deteriorate the blood must aggravate the disease when it has once shown itself. *H. D.*

Poverty, want of cleanliness, coarse and unwholesome food, syphilis, sexual excesses, and all depressing agencies undoubtedly tend to aggravate and accelerate the disease.

The natives believe that the too frequent use of pork as a diet, as well as certain kinds of fish and fruits, either excite or predispose to, and when once formed, aggravate the disease.

I unhesitatingly believe that the frequent living upon an entirely fish-diet, the fish being of an unwholesome kind, frequently putrid and badly cured, such as the native races often subsist upon, often excites the disease in those who are predisposed to it. *T. A. P.*

The disease is aggravated by want of nourishment, and of attention to cleanliness. *T. G.*

8. Yes; sometimes.

I have known instances where the children of a leprous father became affected with the disease, while the wife escaped it; and of one child only of a family suffering, while the others were free from the disease. *H. D.*

It is often hereditary.

Yes. I have known several such instances. *T. A. P.*

I believe it to be hereditary; but sometimes one member only of a family is affected. *T. G.*

9. I have seen cases where leprosy and syphilis co-existed. One case in a remarkable manner proved a certain connection between the two diseases. A native was frequently admitted into the Civil Hospital at Colombo, while under my charge, for primary syphilis. After a time he came in for psoriasis, which gradually assumed the tubercular form of leprosy. I believe he is now in the Leper Asylum at Hendella, a confirmed leper.

Scrofula and syphilis, I believe, would lead to leprosy under favourable circumstances; but that leprosy is a constitutional form of syphilis, as some writers believe, I do not think. *H. D.*

Leprosy is, in my opinion, often dependent or connected, either directly or remotely, with syphilitic taint. *T. A. P.*

The majority of cases that have come under my observation were connected with syphilis; and this is perhaps the reason why the disease itself is more frequent in the towns than in the country. *T. G.*

10. I do not think the disease contagious. People affected with leprosy in Ceylon frequently mix with other people; and among the Moors it is no disqualification for marriage, unless the disease is in an aggravated form, attended with foul ulceration and fetid discharges.

I have said before that the wife of a leprous person escaped the disease, while her child evidenced symptoms of it. *H. D.*

I have not met with a single case of contagious communication of the disease, although popular belief in this country is strongly in favour of its communicability.

I am inclined to believe that the disease in its advanced and ulcerative stages might be capable of infecting healthy individuals, if they frequently come in contact with the diseased, or live with them in close proximity, and breathe the air of confined apartments saturated with offensive emanations. *T. A. P.*

No.

I have not known a single instance in which a wife, whose husband was a leper, was affected by this disease, whereas numerous instances have come under my observation in which the offspring of a diseased person have been affected. I may also remark that in one instance a wife had the disease whilst her husband was free from it; that all the children of the connection were also affected with the disease, but without communicating it to their wives or husbands; and that the disease has lately appeared in the grandchildren of the first-mentioned couple. *T. G.*

11. Yes. So long as a person affected with Leprosy can walk about, he mixes freely with other people. No legal restriction is imposed or segregation enforced. Paupers affected with the disease, when no longer physically able to follow the profession of beggars (which they adopt as an easy means of earning a livlihood, their unfortunate condition exciting much commiseration and sympathy) seek the protection and comforts of the asylum provided for them by Government. *H. D.*

There is no legislative restriction for the compulsory segregation of lepers in this island; but there is a public asylum to which the poor and unfortunate sufferers voluntarily resort. Those who are well to do remain in their own houses and among their own families, but never freely mix themselves with the rest of the community. *T. A. P.*

In Ceylon, no person affected with leprosy is prevented from communicating freely with the rest of the community. *T. G.*

12. There is a leper asylum at Colombo where the leprous poor are fed and clothed at the Government expense, and to which is attached a medical officer. The institution is under the supervision of the Principal Civil Medical Officer of the colony.

They are not admitted into the general hospitals, except perhaps for a few days until they can be transferred to the Leper Asylum, which is beautifully situated on the banks of a river $4\frac{1}{2}$ miles from Colombo town. The arrangements therein are such as obtain in all other well regulated government hopitals, and the inmates are supplied with everything that might contribute to their health and comfort. Medical attendance is provided, medicines supplied, the diet is liberal and nutritious, and even small luxuries, indulged in by natives, are not denied them. They have plenty of water for purposes of ablution. But they are a discontented, dissatisfied body, morose and indulge in drink and opium or Bang.

A return of the cases admitted, &c., into the Leper Asylum from the early part of the century, is appended to the return. *H. D.*

13. Forty-five was about the average daily number of patients maintained at the Leper Hospital during the year 1862. *T. G.*

14. I do not think the disease is on the increase in Ceylon. *H .D.*

I have reason to believe that the disease has of late years been on the increase among the better classes of the colored population. It is, in my opinion, ascribable to imprudent connections with hereditarily predisposed individuals, and to syphilitic taint on the part of the men. *T. A. P.*

In Ceylon the disease has gradually increased during the past 15 years; and the larger number now in the hospital is, I believe, chiefly from the influx of Malabars into Ceylon. *T. G.*

15. I have not observed a spontaneous cure of leprosy. In one case only, medicinal treatment has arrested the further development of the disease. Pure air and a nutritious diet have good effects in this disease. *H. D.*

Medical treatment in all its forms, hygienic and dietetic, may occasionally arrest or protract the disease in its premonitory and incipient stages. It may prevent the progress of the disease to its more loathsome and severe forms, or render it stationary; but it never effectually cures the disease after it has once devoloped itself. It never undergoes a spontaneous cure. *T. A. P.*

I cannot state any satisfactory result from the treatment of this disease; and, to my knowledge, no case of leprosy has ever undergone spontaneous cure. It is a fact that no person treated in the hospital has ever recovered wholly or partially. *T. G.*

16. In 1861 the estimated population was nearly two millions. I am not aware whether any census was ever taken. The number stated above was ascertained for the purposes of the Road Ordinance. *H. D.*

There is no registration of births and deaths; but a bill is in the course of preparation at the present session of the Legislative Council, for a Registration Act to supply the desideratum long felt in the island, and which has always been an acknowledged source of difficulty in the drawing up of any vital statistics. *T. A. P.*

17. In Colombo the largest number of lepers is to be found. That town, being the capital, contains the largest population; and it is not unusual to transfer leprous poor from other districts to Colombo, in order to afford them the comforts of the only Leper Asylum to be found in the colony.

Of this disease, medical men have always found considerable difficulty in ascertaining the causes, and pathology has not afforded any great assistance.

Six photographic portraits of leprous patients are forwarded. *H. D.*

The townships and districts in which leprosy most prevails are in the North-western Province, Colombo, in the Western Province, Galle, Matura, and Ballepittinge in the Southern Province.

I am unable to give either the number of lepers or the population of the respective towns and districts.

With regard to the prevention, mitigation, or cure of the disease, I will mention a few of the remedies I have been in the habit of employing with more or less benefit.

I consider mercury in the first and early stages essentially necessary, not with a view to salivate, but in minute alterative doses, salivation being as much as possible to be avoided. The mercury is to be cautiously administered in conjunction with iodine.

After a mercurial course, followed by alkaline alteratives nitro-muriatic acid may be administered with advantage. Nitro-muriatic acid baths have been frequently tried by me with benefit. Sponging the skin with lotions made of it may also be usefully employed, where baths may not be convenient. It renders the skin smooth, soft, and of a healthier aspect.

The iodide of lead, and the iodine ointment have been frequently used by me, as topical applications and frictions to the spots and tuberculous enlargements. Mercury has always

been considered by me to be contra-indicated in the advanced and ulcerative stages, although it may even here be cautiously tried in conjunction with sarsaparilla or iodide of potassa and hemlock, where the metal had not been previously used. The patients invariably evince a scorbutic or strumous diathesis in every stage of the disease; hence the caution necessary against the indiscriminate use of mercury. I have seen it aggravate the ulcers.

Tonics, nourishing diet, and attention to general health are also indispensable auxiliaries.

T. A. P.

The exact number of lepers cannot be stated. They are frequently seen in the streets of Colombo, where the disease prevails most.

In the diagnosis of leprosy, the most important, and the most difficult, point to be determined is whether it be of syphilitic origin.

The signs of Lepra tuberculosa in its incipient stage are these:—The soft parts of the face, such as the lobes of the ears, the end of the nose, cheek and chin, are seen somewhat swollen, with a dark shade of the skin, of a livid color, slightly elevated; discolored circular patches occur on the arms, near the elbows, and thighs, differing a little in color from the natural skin; and at times patches are observed on the back or sides of the trunk. These, by slow degrees, increase in dimensions, becoming slightly tuberculated and covered with layers of laminated micaceous scales, which desquamating, disclose underneath, a red glistening surface, on which a thin newly formed scale is visible. As the disease continues to advance slowly, patches of various sizes on the hips, buttocks, elbows, and wrists appear, attended with psoriasis. The scrotum is likewise covered with scales. The fingers and toes are benumbed, attended by swelling and a glossy appearance. Ulceration of the soles of the feet occurs, and eventually the bones of the toes and fingers drop off; and in some instances, the patient's eyesight is affected. Invariably the testicles are considerably enlarged; the glands of the groin are likewise swollen and become painful, and are at times followed by suppuration and ulceration. These appearances last for years, and are seen accompanied with psoriasis occuring simultaneously in the same patient. Ultimately, derangment of the bowels, general emaciation and debility, or anasarcous swelling terminates in death.

In the *Lepra mutilans articulorum* there are no tuberculated, elevated thickening patches of the skin, covered with a dark shade. The appearance of the diseased skin in this form is irregular and of a light brown colour; patches of various dimensions appear on the arms, legs, and trunk, differing from the colour of the natural skin. The fingers and toes are contracted and distorted, so that the nails alone are visible, protruding at the end of some of the toes and fingers. The foot in such cases resemble a mere stump at the end of the leg. In both species of the disease, deep seated irregular thick-edged ulcers appear in the soles of the foot, attended with discharge of matter, affecting the tarsal bones, and sometimes followed by exfoliation. But the general health of the patients is not much affected; they generally live longer than those suffering from the tuberculated disease. *T. G.*

RETURN of cases of Leprosy admitted into the the Leper Asylum, Ceylon.

YEAR.	—	Remained.	Admitted.	Total.	Discharged or Absconded.	Died.	Remaining.
1802	Lepra tubercular	–	–	–	–	–	–
	Do. of the extremities	–	1	1	–	–	1
	Total	–	1	1	–	–	1
1807	Lepra tubercular	–	–	–	–	–	–
	Do. of the extremities	1	1	2	–	–	2
	Total	1	1	2	–	–	2
1810	Lepra tubercular	–	–	–	–	–	–
	Do. of the extremities	2	1	3	–	–	3
	Total	2	1	3	–	–	3
1824	Lepra tubercular	–	–	–	–	–	–
	Do. of the extremities	3	1	4	–	–	4
	Total	3	1	4	–	–	4
1827	Lepra tubercular	–	1	1	–	–	1
	Do. of the extremities	4	1	5	–	–	5
	Total	4	2	6	–	–	6
1828	Lepra tubercular	1	2	3	–	–	3
	Do. of the extremities	5	1	6	–	–	6
	Total	6	3	9	–	–	9
1829	Lepra tubercular	3	–	3	–	–	3
	Do. of the extremities	6	1	7	–	–	7
	Total	9	1	10	–	–	10
1830	Lepra tubercular	3	1	4	–	–	4
	Do. of the extremities	7	–	7	–	–	7
	Total	10	1	11	–	–	11

Year.	—	Remained.	Admitted.	Total.	Discharged or Absconded.	Died.	Remaining.
1833	Lepra tubercular - -	4	1	5	–	–	5
	Do. of the extremities -	7	–	7	–	–	7
	Total -	11	1	12	–	–	12
1834	Lepra tubercular - -	5	4	9	–	1	8
	Do. of the extremities -	7	1	8	–	–	8
	Total -	12	5	17	–	1	16
1835	Lepra tubercular - -	8	6	14	–	–	14
	Do. of the extremities -	8	3	11	–	–	11
	Total -	16	9	25	–	–	25
1836	Lepra tubercular - -	14	3	17	–	3	14
	Do. of the extremities -	11	1	12	–	1	11
	Total -	25	4	29	–	4	55
1837	Lepra tubercular - -	14	2	16	–	1	15
	Do. of the extremities -	11	–	11	–	1	10
	Total -	25	2	27	–	2	25
1838	Lepra tubercular - -	15	–	15	–	1	14
	Do. of the extremities -	10	–	10	–	1	9
	Total -	25	–	25	–	2	23
1839	Lepra tubercular - -	14	–	14	–	2	12
	Do. of the extremities -	9	–	9	–	1	8
	Total -	23	–	23	–	3	20
1840	Lepra tubercular - -	12	1	13	–	2	11
	Do. of the extremities -	8	–	8	–	2	6
	Total -	20	1	21	–	4	17
1841	Lepra tubercular - -	11	2	13	–	2	11
	Do. of the extremities -	6	–	6	–	2	4
	Total -	17	2	19	–	4	15
1842	Lepra tubercular - -	11	3	14	–	2	12
	Do. of the extremities -	4	–	4	–	1	3
	Total -	15	3	18	–	3	15
1843	Lepra tubercular - -	12	2	14	–	2	12
	Do. of the extremities -	3	–	3	–	1	2
	Total -	15	2	17	–	3	14
1844	Lepra tubercular - -	12	4	16	–	–	16
	Do. of the extremities -	2	–	2	–	–	2
	Total -	14	4	18	–	–	18
1845	Lepra tubercular - -	16	1	17	–	2	15
	Do. of the extremities -	2	–	2	–	–	2
	Total -	18	1	19	–	2	17
1846	Lepra tubercular - -	15	4	19	–	1	18
	Do. of the extremities -	2	–	2	–	–	2
	Total -	17	4	21	–	1	20
1847	Lepra tubercular - -	18	5	23	–	3	20
	Do. of the extremities -	2	1	3	–	1	2
	Total -	20	6	26	–	4	22
1848	Lepra tubercular - -	20	2	22	–	4	18
	Do. of the extremities -	2	2	4	–	–	4
	Total -	22	4	26	–	4	22
1849	Lepra tubercular - -	18	2	20	1	3	16
	Do. of the extremities -	4	–	4	–	–	4
	Total -	22	2	24	1	3	20
1850	Lepra tubercular - -	16	8	24	1	5	18
	Do. of the extremities -	4	–	4	–	–	4
	Total -	20	8	28	1	5	22
1851	Lepra tubercular - -	18	18	36	9	4	23
	Do. of the extremities -	4	–	4	–	1	3
	Total -	22	18	40	9	5	26
1852	Lepra tubercular - -	23	10	33	4	5	24
	Do. of the extremities -	3	–	3	–	–	3
	Total -	26	10	36	4	5	27
1853	Lepra tubercular - -	24	13	37	8	4	25
	Do. of the extremities -	3	–	3	–	–	3
	Total -	27	13	40	8	4	28
1854	Lepra tubercular - -	25	12	37	6	8	23
	Do. of the extremities -	3	–	3	–	–	3
	Total -	28	12	40	6	8	26
1855	Lepra tubercular - -	23	15	38	5	6	27
	Do. of the extremities -	3	1	4	–	–	4
	Total -	26	16	42	5	6	31
1856	Lepra tubercular - -	27	20	47	8	12	27
	Do. of the extremities -	4	–	4	–	–	4
	Total -	31	20	51	8	12	31
1857	Lepra tubercular - -	27	10	37	7	3	27
	Do. of the extremities -	4	–	4	–	–	4
	Total -	31	10	41	7	3	31
1858	Lepra tubercular - -	27	24	51	18	4	29
	Do. of the extremities -	4	4	8	–	–	8
	Total -	31	28	59	18	4	37
1859	Lepra tubercular - -	29	14	43	8	9	26
	Do. of the extremities -	8	4	12	–	1	11
	Total -	37	18	55	8	10	37
1860	Lepra tubercular - -	26	12	38	3	7	28
	Do. of the extremities -	11	1	12	1	1	10
	Total -	37	13	50	4	8	38
1861	Lepra tubercular - -	28	20	48	11	5	32
	Do. of the extremities -	10	4	14	2	2	10
	Total -	38	24	62	13	7	42
1862	Lepra tubercular - -	32	19	51	4	9	38
	Do. of the extremities -	10	2	12	1	1	10
	Total -	42	21	63	5	10	48
1802–1862	Lepra tubercular - -	–	241	–	93	110	38
	Do. of the extremities -	–	31	–	4	17	10
	Total -	–	272	–	97	127	48

Those discharged and absconded during the above periods were suffering from the disease, and not cured.

1. Of those colonies in which I have served on the medical staff of the army, the only ones in which I have witnessed the disease have been Ceylon, Barbados, and Trinidad.

In Barbados I saw it only in the form of elephas or Barbados-leg, which, though it may be allied, does not strictly come under the head of leprosy. Whilst I was in that island, three years and a half, I saw very few cases of it; this was from 1845 to 1848. I had no opportunity of studying it there. There, at that time, there was no hospital for the reception of such cases. The disease was chiefly confined to one or to both lower extremities, and was entirely chronic. It did not seem to affect materially the general health; it advanced at intervals, with febrile exacerbations.

In Trinidad, which I visited twice in the performance of my duties as Inspector General of Army Hospitals, my experience of the disease was very limited indeed. There is a leper hospital there, which I saw and examined in company with the then governor, Lord Harris. At the time, March 30th, 1847, it contained 47 patients under the care of a physician, an apothecary, and a surveyor. The majority of the cases were of the tubercular kind—the elephantiasis of the Greek writers; some of them laboured under "the joint-fever," the name there applied to the cases in which there was a loss of fingers or toes, or of both, from ulceration, with febrile paroxysms. There were amongst the inmates two or three cases of elephas or "Barbados-leg."

In Ceylon I witnessed the disease when in that island in 1816. Then, for about four months I had the superintendence of the leper hospital situated on the bank of the Kalany Gange, a river about three miles from Columbo. The number of cases collected there was 32, of which 17 were males, 15 females; of each of these cases I made notes, to which, having been preserved, I now refer. Owing to the short time of my superintendence, these notes are less extended than I could wish, and, owing to the same circumstance, I had not an opportunity to judge with any confidence of the medical treatment employed. Some of the cases were good examples of elephantiasis, i.e., of the tubercular disease; others were striking instances of the ulcerative disease, affecting chiefly the extremities, occasioning often their deformity from contraction and a loss often of the phalanges; a few bore the character of elephas. In the larger number of instances, there was a more or less complication of lesions—of tubercles, ulceration, and swelling—suggestive of a common taint, or *causa mali*.

2. The ages of the cases in the Ceylon hospital varied from 7 to 60 years. The disease began at various ages, from early childhood to 40 years.
A febrile attack occurred commonly at first, following some accidental lesion or disease, such as small pox, measles, psora.

3. Its development in these hospital cases was very various, commonly slow. The only fatal case I saw died at the age of 43.

4. As already stated. The female cases in the Ceylon hospital were to the male as 15 to 17.

5. The cases in the Ceylon hospital were of many different races, chiefly, as might be expected, native Singalese; besides, there were some Malays, some natives of the Malabar coasts; two or three of Dutch extraction; and one of French.

6. All the cases of which I had any knowledge in Ceylon, in Trinidad, Barbados, were of the lower class, with two exceptions. In the Trinidad hospital there was one gentleman reported, whom I did not see. In Barbados I knew a gentleman planter who laboured under elephas. His health was good, except during the febrile exacerbation to which from time to time he was subject. He was very robust.

7. I cannot say.

8. The disease seems occasionally to be hereditary. The medical officer of the Trinidad Hospital told me of the following instance. A man, after having had two children by his wife, these healthy, became leprous, and ultimately died of the disease. The children, born after the setting in of the disease, also became leprous. In Ceylon there were three instances of the offspring of diseased parents having the same disease; in one case the mother, in two the father was affected; of the former, the other children remained exempt from the malady.

9. All I can venture to say is, that from my limited experience I think there may be, as already hinted at, some connexion between elephantiasis, elephas, and the ulcerative disease, and for the reason already assigned.

10. I have no reason to consider it contagious or transmissible by sexual intercourse. Such (that it is not) is the prevailing opinion in Ceylon and Trinidad, according to the information I obtained.

11. I am not aware of any restrictions.

12. As already stated, in Ceylon and Trinidad there is an hospital special for the reception of lepers.
Owing to the lapse of time since I saw these hospitals, I do not describe them.

13. The patients in the Trinidad and Ceylon hospital, whose numbers have been given, were maintained at the expense of these colonies.

14. I am unable to reply.

15. I never heard of a case of spontaneous cure. The disease, I believe, may be mitigated by treatment, and especially through attention to the general health, like other cutaneous eruptions often the accompaniments of the tubercular malady. In some cases arsenic appears to be useful. The physician of the Trinidad hospital used largely hydriodate of potash and chloride of barium, 30 grains sometimes of the latter in the day, and 60 grains of the former. He thought he witnessed more good effects from them than from any other medicine.

16. These questions *now* I cannot well answer.

17. As to post-mortem examinations, the only one I made was of a Singalese, ætat 43, who had been labouring under the disease 14 years. The subjoined account of the autopsy will be found in my work "On the Interior of Ceylon," published in 1821. A mistake has been made there as to his age. In my notes, as given above, it is stated to be 43, with the remark that he looked as if 60.

"In a very few instances I have seen the two kinds of elephantiasis, viz., leprosy of the joints, and the tuberculated species combined. I may mention one case, in particular, of this combination, as I had an opportunity of examining the diseased appearances. The individual was a Singalese, 60 years old, and the disease had been increasing on him 14 years when I first saw him, September 1816. . . . On the 26th November he was moribund. The surface was fissured and excoriated in a hundred different places. The left foot was in a state of gangrene, and he died the next day. The heart was rather small and flaccid, and its parietes were thin, a thick layer of fat covering its outward surface. The liver was too large, pale, and marked with white spots. The gall-bladder was distended with greenish bile. Much fat was accumulated about the mesentery. A few red spots appeared on the mucous membrane of the intestine. A section of the slightly enlarged glands of the groin exhibited no decidedly-marked diseased structure. The tuberculated parts of the skin were thickened, and each tubercle seemed to be produced chiefly by a thickening of the cutis. The integuments of the lower extremities, and especially of the knees, legs, and feet, were generally thickened. In most places the true skin was not less than a quarter of an inch thick. Under the thickened layer a layer of fat presented itself, which was also diffused through the cellular membrane, between the muscles. Most of the muscles of the leg seemed to be converted into adipose matter, so that very little muscular fibre remained. At both knee-joints, the capsular membranes and bursæ were distended with an oily or fatty matter, which was yellow, semi-fluid, and granular, and in appearance very like honey. No serous effusion was observed in any part of the body."

John Davy, M.D., F.R.S.,
Inspector-General of Army Hospitals.

Lesketh How, Ambleside,
November 21st, 1862.

No. 38.

MADRAS PRESIDENCY.

Public Letter from Fort St. George, dated 11th October, No. 35. of 1864.

Your Despatch of the 8th December 1862, No. 42, requesting to be furnished with replies to the interrogatories by the Royal College of Physicians, respecting the character and progress of Leprosy in this Presidency, and also with any additional information obtainable here relative to the treatment of the disease, was, on its receipt, at once placed in the hands of the Principal Inspector General, Medical Department, with instructions to take necessary steps for procuring, as early as practicable, and submitting, with his own views on the subject, the information called for.

2. This Mr. Shaw, the Officiating Principal Inspector General, has now done, and we beg to forward the several reports received from him, with a copy of his letter in review of those reports, which as there has been considerable delay in furnishing them, we have not deemed it advisable to detain for the purpose of being printed.

Proceedings, 7th October 1864, Nos. 29 and 30.

No. 29. Read the following letter from J. Shaw, Esq., Officiating Principal Inspector General, Medical Department, Fort Saint George, to the Honourable A. J. Arbuthnot, Chief Secretary to Government, Public Department, Fort Saint George, dated 16th September 1864, No. 306.

I have the honour to transmit to Government, for communication to the Secretary of State for India, all the Reports which have been received up to this date on the subject of leprosy.

2. In this Presidency there are three Lazarettos, one at Madras, one at Cochin, and one at Bangalore. The Report from the Officer in charge of the Bangalore Institution has been sent to the Government of India.

3. In consequence of the want of statistics, the Reporters are unable to reply to that important interrogatory, where it is asked to give the number of lepers, the population in the townships and districts in which it most prevails.

4. In the remarks which follow I have attempted to analyse, as far as the subject would admit, the various Reports, and to render them as connected as possible I have adhered to the order in which the interrogatories by the Royal College of Physicians have been drawn up.

5. From the nature of these inquiries I have been obliged to make my remarks more extended than I anticipated, and I fear in some parts to repeat myself.

6. I beg to call attention to the very able Reports by Drs. Porteous, Van Someren, and Day.

I.—Leprosy (the Lepra Arabum, elephantiasis Græcorum of deomatologists) is a disease of frequent occurrence throughout the Madras Presidency, more especially in all the large towns on the Eastern and Western Coasts, but more especially in the latter. At stations somewhat inland, though known, it cannot be said to prevail. It is not often seen at Bellary, (Dr. Dorward); it is known but not often seen at Cuddapah, (Dr. Doyle); does not prevail at Coimbatore, (Dr. Ogg); nor Guntoor, (Dr. Crowdace); but few cases occur at Rajahmundry, (Dr. Macdonald). It is not often met with at Chittoor, (Dr. DeFabeck); nor at Tinnevelly, (Dr. Gillies); while the Medical Officers serving at Secunderabad are unable to afford any information on the subject.

In Burmah leprosy does not appear to be frequently met with; a few cases only are reported from Moulmein; at Rangoon, Dr. Ford, many years Garrison Surgeon at Rangoon, has met with no case of leprosy there, and in the district of Henzadah but eight cases have been met with. The Medical Officers serving in Burmah give it as their opinion that it is not common among the Burmese.

Two distinct forms of the disease are recognized throughout the Madras Presidency by those who have had the most extended opportunities of studying it. These two forms are not unfrequently combined in the same individual, constituting the compound or mixed variety, (Day); while some of the Reporters, Furnell, Rean, and Shortt, describe a third form under the name of Lepra lencopathica vel albida, (Vullay koostum, Tamil); but this appears to be a species of albinoisin, commencing insidiously with spots on the extremities, trunk, or face, which enlarge without structural change, and without much functional derangement coalesce, occasionally increasing to such an extent as completely to assimilate the dark skin to that of a fair European. This condition contrasts with true albinoisin(?), the

hair of the head being unchanged, and the irides retaining their colouring matter (Furnell). We often find this state associated with burning of the eyes, hands, and feet; it is also occasionally combined with leprosy, but when uncomplicated it leads to no impairment of health, neither does it induce the ulcerations and hideous mutilations which accompany leprosy. Circumscribed white patches on the extremities, on the palms of the hand, face, and feet are by no means uncommon among the Natives of Southern India. These small spots often remain stationary for years, whilst at other times they spread and involve the whole of the skin; but this discharge of the cutaneous pigment in none of its essentials resembles leprosy, nor does the black discoloration of the skin, which is also occasionally met with.

Lepra anæsthetica, Poonnah kooshta themir coostarogum (Tamil).

The anæsthetic form of the disease is the most common in Southern India; we find that in 1864 out of 75 cases at the leper hospital, Madras, 45 were of the anæsthetic form (Dr. Van Someren's pamphlet). In Cochin Dr. Day does not state the proportion, but he says the anæsthetic form is the most common.

Anæsthesia of an extremity, or of a portion of an extremity, or of localized spots on the trunk, attended by slight loss of colour in the anæsthetic part is usually the first indication of the disease; it occurs without any constitutional symptom, and so insidiously that its existence is often unsuspected; the spots are usually small, though of varying size, irregular or round in outline, and appear as if the colour had been partially discharged from them; they are usually dry, and present a peculiar glistening appearance, combined at times with wrinkling, or bullæ form over the extremities of the fingers, the toes, or over the back of one or more of the phalangeal joints; these latter soon lose their flexibility, the finger becomes swollen, the vesicle bursts and leaves a round glazed and intractable ulcer, which either heals slowly, to be followed by others of a similar character at longer or shorter intervals of time, or probably it destroys all the soft textures and exposes dead and carious bone. While these ulcerations are in progress, changes of a destructive nature are also occurring in the bones and articulations; the latter become stiff and peculiarly distorted, a process of interstitial absorption is going on in the phalanges, so that in a short time the last bone of the finger is entirely removed, and the altered nail and pulp is to be seen fore-shortened on the second phalanx, or if that has also undergone absorption, the soft parts of the two terminal phalanges may be seen on the first phalanx. Although destruction of the bones of the hand by interstitial absorption is perhaps the most common, yet it is often effected by caries and necrosis.

When the destruction of bone is considerable, the distortion of the hand is often very peculiar; the fingers become so much distorted and stiffened as more to resemble the talons of a bird than the human hand, the first phalanges of the fingers are bent backwards, while the second and last are curved into a claw-like shape, in which position they become stiffened, and the whole hand becomes withered, wasted, and insensible. In like manner the toes are absorbed and fore-shortened, so that a toeless foot remains accompanied by the destruction of one or more of the metacarpal bones. Ulcers often form in the soles, and corrode deeply towards the metacarpal or carpal bones; the edges of these ulcers are hard, callous, and insensible, and appear as if they were cut out by a punch, or some such instrument; these ulcers sooner or later communicate with dead or dying bone. Owing to the hands and feet being generally anæsthetic, the commencement of the destructive processes just described may be mechanically caused by fire, or abrasions; but irrespective of these, vesicles often form on the insensible surfaces.

The anæsthesia usually in a few months extends up to the knees and elbows, but often much further; cases occurring where it is so complete that in the tongue alone sensibility remained. (*Day*).

Mutilation seldom extends beyond the fingers and toes. Epistaxis occasionally occurs, but more frequently there is a fœtid discharge from one or both nostrils followed by destruction of the bones of the nose and palate, from which the voice becomes altered and hearing affected. The cornea often becomes hazy and ulcerated, the lower lid everted, the conjunctiva thickened, and consequent loss of vision. In this condition, more or less maimed and helpless, the leper drags out a weary existence protracted over decades of years, till at last he succumbs under an intercurrent attack of diarrhœa, dysentery, dropsy, or bronchitis.

Lepra Tuberculata, Koostum coostarogum (Tamil), appears insidiously without any or but ill-defined constitutional symptoms; burning and itching are complained of in the face and extremities, and the skin is often dry, bronze, or fawn coloured; raised patches of various shapes and dimensions soon appear on the face and extremities; sometimes they present a glazed and shining appearance, or the reverse. These elevated patches are often hypersensitive (Day, Van Someren) in the first instance, but gradually become insensible and continue so. In some the *distinct* tubercles are comparatively few, but the face is covered

with livid, smooth, shining blotches; the nose, ears, brows and chin are the parts chiefly affected; in severe cases, the face becomes one nodulated mass, producing a most revolting appearance; the moustaches, whiskers, the hair of the eye-brows and of the eye-lids fall off, the nose becomes flattened, its alæ enlarged by tubercles, and the lobes of the ears pendulous. This arrangement of the tubercles, the staring effected, produced by the eyes in consequence of the want of lashes, and the sallow complexion has led to the affix *leonine* being applied to this phase of the disease. The tongue and mucous membranes covering the hard palate become studded with tubercles, discharges of pus and blood from the nares are frequent, the voice becomes weak and altered, sometimes entirely lost, and the patient blear-eyed.

The skin of the extremities is usually dry, shining, and thin, often fissured on the soles of the feet and on the knuckles, the ends of the fingers thick and clubbed, the nails horny and raised by a deposit under them. There is not the same amount of distortion in the hands and feet that occurs in the anæsthetic form of the disease; indeed, it is not uncommon to see perfect hands in the advanced stages of the tubercular form of the disease. Even when stiffening of the joints occur, there is not the same tendency to their flexion, nor is interstitial absorption of the phalanges so common; their destruction is generally by necrosis, the tubercles breaking down and forming foul and painful circular sores on the soles of the feet, heels, and palms, causing the destruction of the smaller joints. In this, the tubercular form, the loss of sensation is not so complete, but the patient is much more disfigured and loathsome in appearance than in the anæsthetic, the suffering is greater, and the disease runs a more rapid course terminating in chronic diarrhœa or dropsy.

The anæsthetic and tubercular forms or varieties are often combined in the same individual, constituting a mixed variety. In neither do any definite or well marked constitutional symptoms precede the local development of the disease, but both are often complicated with other skin diseases, especially scabies, psoriasis, chronic eczema, and venereal eruptions.

II. Dr. Day has seen leprosy in an infant in arms whose mother was a leper, and Dr. Porteous has treated a child of four years old; but out of 58 patients in the Leper Hospital, Madras, in February 1863, in two only had the disease appeared before the 10th year of life. Dr. Van Someren gives a table showing that in 58 patients, 15 cases of the anæsthetic and 16 of the tubercular form, or in 31 out of 58 cases (53 per cent.), the disease appeared between the 20th and 30th year of life.

III. The full development of the disease does not appear connected with any particular period of life, but depends rather on the period of its own commencement, irrespective of the age of the subject; thus, beginning in a child the maturity of the disease may be reached long before the maturity of the patient, (Van Someren). Dr. Porteous again considers that the disease does not obtain its full development till the subject of it is about 25 years of age. Dr. Day, not till between the 30th and 50th years, while Dr. Rean sets it down at 40th year of life. Dr. Shortt says, the full development of this disease seems to depend on the mode of life, habits, and living as well as the peculiar idiosyncrasy of the patients, but its intensity increases with age.

The following table shows the number, among 58 patients in the leper Hospital, Madras, in whom the disease reached maturity within the quinquennial periods mentioned:—

Under 5 years.	5 to 10.	10 to 15.	15 to 20.	Total.
33	20	3	2	58

Van Someren.

Dr. Porteous gives the average age of 48 lepers under his charge at 38. Of 50 cases under treatment at Cochin, 10 per cent. were between 60 and 70, and 2 per cent. of them were over 70 years of age. Dr. Shortt says, it is seldom fatal before 40 years of age. Dr. Rean, that death in lepers seems to be generally caused by want, and the unfavourable influences to which they are exposed; when well taken care of, they are capable of living to a considerable age. No death is recorded in the Leper Hospital, Madras, since 1855 under 20 years of age; and the following table shows the numbers and ages under each quinquennial period for the total deaths, viz., 183:—

20 to 25.	25 to 30.	30 to 35.	35 to 40.	40 to 45.	45 to 50.	50 to 55.	55 to 60.	Above 60.	Total.
27	22	20	34	30	18	16	4	12	183

Van Someren.

IV. The disease is more frequent in males than in females in the Lazaretto at Madras, 5·36 males were found for one female, and at Cochin 2·33 for one female.

V. The disease undoubtedly attacks all races, European, East Indians, Musselmans, and Hindoos of all denominations, Brahmins as well as Pariahs.

It is, however, rare among Europeans. East Indians suffer considerably, though not so severely as Natives, especially the lower orders.

VI. The disease is unquestionably most rife among the poorer and lower orders residing in the seacoast towns, which are low and damp, though it is by no means unknown in inland, rural, and even in hilly districts. A table by Dr. Van Someren in his report, showing where the disease first betrayed itself among the present inmates of the Madras Leper Hospital, shows that in 41 out of 58 cases, the disease first disclosed itself in the district of Madras, and of these 37 were from the town of Madras itself. All the Reporters are unanimous in pronouncing the dwellings of those afflicted with leprosy as generally extremely filthy and defective in all sanitary requirements. In Cochin, the disease is said by Mr. Day to be most prevalent among the soil slave caste, who live in wretched hovels, and may be said to be more like cattle than human beings in the way they are fed and treated; filthy in the extreme, devoid of morality and almost of common decency. Dr. Shortt says, in the Chingleput District the largest number of lepers come from the populous town of Conjeeveram, 40 miles inland, which has a flat, dry, and sandy soil, but abounding in filth, animal and vegetable, in every stage of putrescence.

On the Western Coast of the Peninsula, leprosy prevails to a great extent. By some writers this is attributed to the dampness of the climate and to the diet of the better classes, consisting almost entirely of fish and rice, whilst the poorer live upon the flesh of enormous sharks and other coarse fish, frequently in a state of putrescence; yet in Burmah the disease is rare compared with the Western Coast of India, although the climates are in many respects similar as regards humidity and rain, and the inhabitants subsist almost entirely on putrid fish and rice with condiments. Were these causes the fons et origo mali, leprosy would be as common among the Burmese as in the inhabitants of the Western Coast of India.

The occupations of the affected in the Lazaretto at Madras and Cochin, are as follow:—

Labourers or cultivators	37	Sailor	1
Soil slaves	5	Weaver	1
Boatmen and fishermen	7	Coachman	1
Toddy-drawers	5	Chuckler	1
Artisans	8	Draughtsman	1
Petty shop-keepers	5	Native soldiers	5
Sweepers	2	Peon	1
Waterwomen	2	Schoolmaster	1
Unemployed (beggars)	10		
Cooks	12	Total	106
Cooper	1		

VII. Poverty, low living, hardship, filthy habits, and debauchery aggravate and accelerate the disease when once it has manifested itself.

VIII. Dr. Furnell says, the people of Malabar believe leprosy to be hereditary. Dr. Day states that out of 46 cases hereditary transmission could only be traced in 19, was entirely absent in 27, and in 6 had evidently passed over one generation to re-appear in the succeeding. Dr. Shortt mentions 6 cases of hereditary transmission, 2 of these being brothers; of 31 lepers whose cases were collected by Dr. Porteous, the mothers of but 2 were affected, and in no case the father; therefore in 2 only out of 31 was it inherited. These 31 lepers had 111 brothers and sisters who were not leprous; 13 of the 31 lepers were married and had 46 children among them, in none of whom had the disease betrayed itself. None of the parents of these 13 were affected; the disease therefore was not in these cases communicated by diseased parents, nor did these parents inherit it from theirs.

Dr. Van Someren in his experience adduces but one case of inheritance in which a mother had two leprous children.

In addition to the 29 cases just quoted, as tabulated by Dr. Porteous, Dr Shortt knew of 26 cases, and Dr. Day many instances where one member only of the family was affected. The conclusion is, therefore, that "inheritance does not constitute a strong predisposition to the disease."

In addition to the above evidence, I may state that in my private practice I have met with tubercular leprosy in three European males, all of whom from their social position had every care and luxury that money could provide.

I fancy that one of these cases is alluded to by Dr. Porteous in his report. One occurred 12 years ago in the son of an officer; the symptoms of leprosy first appeared in numerous dark spots on the face and body when upon the voyage to England; he was then about nine years of age. The dark spots soon assumed the form of tubercles; upon his return to India two years afterwards many of the tubercles, especially those in the inguinal and axillary regions had ulcerated and formed deep, foul, and painful sores; the boy had a slight attack of diarrhœa under which he sank within three years from the first appearance of the disease. His parents were both Europeans; neither they nor any members of their family have shown the slightest taint.

The second case was in a mercantile man, married, of intemperate habits; when about the age of 43, dark spots appeared over the face and body and soon became tubercles, several of which ulcerated, and within 18 months of their first appearance he was carried off by hæmorrhage from the bowels.

The third instance of leprosy in a European that I have met with was in a married officer. I was not his regular medical attendant, but I saw him very frequently, and occasionally professionally. I understand the disease commenced when he was about 45 years of age; two years afterwards the face was one nodulated mass, the hair from the brows and eye-lids had fallen off, the tubercles on his feet and legs, which were numerous, soon ulcerated, leaving irritable sores with most offensive discharges. Seven years after the commencement of the disease he returned to Europe in the winter, and in a few days after his arrival died, it was said from cold, not being able by any artificial means to keep himself warm. This gentleman had a large family and many near relatives, all of whom as well as his parents were and are perfectly healthy.

IX. Syphilis is extremely common among the Natives of India, and all the Reporters who have come in contact with leprosy mention syphilis as no uncommon complication. Among the 58 patients in the Leper Hospital, Madras, 11 had syphilis previous to the accession of the leprosy; but in none of the Reports is any connection traced between leprosy and syphilis.

Mr. Day in his report, and also in a paper in the "Madras Quarterly Journal of Medical Science," endeavours to establish that elephantiasis Arabum is allied closely to elephantiasis Græcorum or leprosy, from the circumstance that nearly all the lepers under his charge at Cochin showed symptoms of elephantiasis; he asserts that elephantiasis is not a local disease but a constitutional one, because the two exist in the same quarter of the globe, and that the same species of fever, elephantoid, occurs in elephantiasis and in leprosy. None of the other Reporters, though some have had an equally large number of lepers to deal with, have remarked a similar tendency to the development of elephantiasis among lepers. It should be stated that elephantiasis Arabum exists to such an extent in Cochin as to have acquired for its designation the name of the "Cochin leg," but this disease is sufficiently common in many other parts of India; the Cochin leg and other forms of elephantiasis may be seen daily in Madras without a trace of leprosy.

X.—Leprosy does not appear to be contagious. In 1853 Mr. Porteous gave a list of the servants who were employed at the Madras Leper Hospital, with the dates of their service, by which it appeared there were 9 servants in the institution who had been employed for periods varying between 2 and 14 years, and all were unaffected with the disease; two of the shortest residents had succeeded relatives who had died in the institution from cholera and dysentery, both after 10 years' service; since then one of the cooks, and one of the peons have shown signs of the disease, but both these servants come but little in contact with the sick, while the ward coolies and sweepers who have most to do with them in dressing their sores, and removing their excreta, have enjoyed a complete immunity from the disease. Under these qualifying circumstances, says Dr. Van Someren, it would appear more correct to regard the malady in the cook and peon as originating in other causes. The same observation is made by Dr. Rean at Chicacole, where lepers are occasionally admitted as ordinary patients ailing from other diseases. A lad was detained in the Cochin Lazaretto upwards of a year who had not got the disease; he was released by Dr. Day and continued unaffected at the date of his report some years after.

XI.—The Natives believe that the disease is transmitted by sexual intercourse. Dr. Furnell quotes from his Native assistants' experience the case of a postmaster who became leprous two or three years after his wife, which was attributed to their intercourse, though Dr. Furnell himself does not believe in this mode of its transmission. Dr. Shortt says that some few instances of lepers living with their wives have come under his knowledge, as well as leper wives living with clean husbands, and in no instance has he seen either party affected. In the village of Palliport, says Dr. Day, a leper took a wife from an unaffected family, she has the disease now, and so have all her children; but another woman lived with her husband,

who is a leper, above 30 years, and remained unaffected. Although I have known instances, says Dr. Van Someren, of either husband or wife being affected, I do not know an instance in which either communicated the disease to the other. Dr. Gillies says, I have known two European males who were married and had issue, and living to old age without communicating the disease to their wives.

XII.—There are no laws in this Presidency which prevent persons affected with leprosy communicating with the rest of the community, and no segregation takes place; but on the whole they are avoided by the community.

As already stated there are three Lazarettos in this Presidency; one at Madras, one at Cochin, and one at Bangalore. As a rule, lepers are not admitted into the General or Civil Hospitals throughout the country, but a leper affected with any intercurrent disease would not be denied admittance.

The Madras Leper Hospital is fully described by Dr. Van Someren at page 6 of his Essay, and that of Cochin by Dr. Day in his answer to Query 12.

XIII.—All these institutions have suitable establishments of medical attendance, ward attendants, washermen, sweepers, coolies, &c., and the same dietary is allowed as in European and Native Hospitals respectively. All are admitted who seek relief, and such as are picked up by the police as vagrants and beggars are brought to the Leper Hospital. They are encouraged in Madras to employ themselves in gardening, which the grounds admit of; many do so and cultivate fruit trees and vegetables, the profits of which are made over to the patients themselves; but many get tired of the monotony of hospital life and seek their discharge after varying periods. There is no law by which they can be detained in the house, but they not unfrequently return.

About 60 lepers in Madras, and between 30 or 40 at Cochin, and about 5 or 6 at Chinglepnt, are generally under treatment.

XIV.—The disease appears to be stationary in the Madras Presidency.

Dr. Furnell believes he has seen good results follow the Tanjore or arsenical pill, but he has seen no cases of spontaneous cure; neither has Dr. Shortt, nor does he believe a thorough cure is ever effected, the disease only terminating with the life of the patient. Of the 118 cases that came under his treatment during the last five years, he says none were cured, though all benefited more or less in general health, or in the healing of their ulcers.

XV.—Dr. Day says in anæsthetic leprosy the root of the madar plant (asclepias gegantea) sometimes does good, and in the tubercular preparations of bichloride of mercury and arsenic; but, he continues, I have seen no well developed case cured either spontaneously or due to the effects of medicine; the disease often spontaneously ceases for a period, but returns again at some future date, unless some other disease should carry off the patient. Dr. Rean has often found sores heal with the comp. unguentum iodinii, and he adds, I believe that when a certain amount of tissue has been destroyed, there is a tendency to a spontaneous cure.

In the Leper Hospital, Madras, a variety of drugs reported to be efficacious in leprosy have been tried without any benefit.

In 1841, Mr Lawder (quoted by Dr. Van Someren) wrote thus—"In the treatment of "leprosy I have tried almost all the remedies recommended by the different medical authors, "I am sorry to say without any hope of cure, and from what I have seen of the disease "during the last 16 years, I have no doubt of its being incurable. At the same time I "believe many of its most urgent symptoms are capable of being mitigated by medical "treatment, and the lives of the unfortunate sufferers in a great measure rendered comfortable "in comparison of what they otherwise would be."

After mentioning the intestinal and cutaneous irritation caused by the use of the Asiatic pill, Surgeon Davidson states, also quoted by Dr. Van Someren, "when this irritation subsided, "however, the patient appeared to be a good deal better, skin much less unhealthy looking "than before these medicines were given; but the improvement did not seem to be very "considerable, and irritating the bowels and skin seems very objectionable in a disease, in "which there is generally a tendency to ulcerative process in both the skin and the bowels. "There appears to be a general fading of the system."

Surgeon Evan's Report for 1847 contains this paragraph:—"The lepers for the most "part have continued in comparatively good general health. I regret, I cannot notify "any encouraging improvement in the leprous disease itself from the medicines employed. "In one or two cases, however, lately admitted, hydrodate of potass seems to have produced "at least temporary benefit."

Assistant Surgeon Paul says—"In 1855, the therapeutic virtues of the hydrocotyle and "chowl moogree received a fair trial at the hands of Dr. Porteous, and they were found "to produce no amelioration whatever of the disease." This year no specific has been exhibited, and the patients have had little medicine beyond an occasional purgative, or such

medicines as were called for in intercurrent inflammatory attacks. In a few, however, I should state Donovan's solution in small doses was given for long periods, "but I cannot say with "marked or material benefit. The chief benefits derived by the inmates of the institution "are those arising from cleanliness, which, with good and regular food, has a marked "influence on the disease. Miserable objects in every degree of loathsome wretchedness "are admitted, covered with, or rather incrusted, in filth; indeed, many had not washed for "years, under the belief that ablution aggravates the disease; but after the plentiful use of "soap and cold water daily for a time, their sores heal, their skin get more healthy, and "they even gain flesh. Although their present condition is thus rendered more bearable, "the progress of the disease is in no way arrested."

Upon these opinions Dr. Van Someren remarks:—"The testimony of all these medical "officers not only settles the inutility of drugs from which great benefit was expected, but it "shows that considerable improvement in the general physical condition of the patients may "be secured by placing them in favourable hygienic conditions. Good food, pure air, a "rigid attention to cleanliness, and a certain amount of bodily exercise, certainly contribute "more than anything else to ameliorate the health of lepers; and if the Materia Medica be "indented on, it should be for such medicines as are calculated to improve the quality of "of the blood. Chalybeates, the preparations of iodine and iron, and cod-liver oil, promise "the most benefit as internal remedies; while anointing the dry and fissured skin with "emollient oils, the use of sulphur vapour baths, and the application of calamine cerate, "astringent lotions, water dressing, or calaplasms to sores, according to the circumstances "of each case, seem the external measures especially indicated. Reference has been made "to the intercurrent attacks of other diseases, such as dysentery, diarrhœa, albuminuria, and "pulmonary affections, to which these poor invalids are more or less liable, and which "demand other and appropriate treatment; but, looking to the peculiar abnormal condition "of these patients, it is scarcely necessary to insist on the cautions and sparing employment "of such an atonic and depressing drug as mercury, and one also which operates so "powerfully in reducing the proportion of red corpuscles in the blood."

XVI. I have shown in the commencement of this Report the impossibility of giving a satisfactory reply to this interrogation.

XVII. There are two excellent papers by Drs. Day and Van Someron on Leprosy published in the 1st and 3rd Volumes of the "Madras Quarterly Journal of Medical Science;" a copy of the latter of these papers is appended,

Few satisfactory *post mortems* of lepers have been made; the loathsomeness of the disease, the heat of this climate, and the prejudices of the Natives, all conspire to prevent these being frequently instituted.

Lists of Reports and Letters on the subject of Leprosy.

1. Bellary.—By Deputy Inspector General of Hospitals, J. Dorward.
2. Burmah.—Bassein.—By Assistant Surgeon, A. C. Nesbit.
3. „ Henzada.—By Native Doctor Abdool Hakeem.
4. „ Moulmein.—By Assistant Surgeon, G. Marr, M.D.
5. „ „ „ H. Griesbach, M.D.
6. „ Prome. „ F. Barlow, M.D.
7. „ Rangoon.—Staff Surgeon-Major, C. G. E. Ford, F.R.C.S.
8. „ „ Surgeon-Major T. Best.
9. „ „ Deputy Inspector General of Hospitals, E. G. Balfour.
10. „ „ Assistant Surgeon, J Wilkins, M.D.
11. „ „ „ A. Cowie.
12. „ Shouay Gheen. „ D. Kearney.
13. „ Thyetmyoo.—Surgeon-Major, R. R. Sutleffe.
14. „ „ Assistant Surgeon, H. Griffith.
15. „ „ „ A. O. McTavish.
16. „ Tonghoo. „ B. Suffrein.
17. „ „ „ R. O. Hayden.
18. Chicacole.—By Assistant Surgeon, W. H. Rean, M.D.
19. Chingleput. „ J. Shortt, M.D.
20. Chittoor. „ W. F. De Fabeck.

21. Cocanada.—By Assistant Surgeon, E. E. Lloyd.
22. Cochin. „ F. Day.
23. Coimbatore. „ G. S. W. Ogg, M.D.
24. Cuddapah. „ J. T. J- Doyle.
25. Guntoor. „ T. Croudace.
26. Madras.— { Surgeon, W. J. Van Someren, M.D. / Deputy Inspector General of Hospitals, J. M'Kenna, M.D. / Surgeon-Major, H. W. Porteous,
27. Mangalore.—Assistant Surgeon, S. Rule, M.D.
28. Palamoottah. „ J. D. Gillies, M.B.
29. Rajahmundry. „ J. M'Donald.
30. Salem.—Surgeon,, H. R. D. Marrett.
31. Secunderabad.—Deputy Inspector General of Hospitals, J. F. Maule.
32. Tanjore.—Assistant Surgeon, J. Ross, M.B.
33, Tellicherry. „ M. C. Furnell.
34. Vizagapatam.— { „ C. A. Andrews. / Deputy Inspector General of Hospitals, T. Cooper.

(Signed) J. Shaw,
Offig. Prin. Inspr. Genl., Medl. Dept.

No. 30. Order thereon, 7th October 1864, No. 1136.

A copy of this letter, together with the Reports therein alluded to, will be forwarded to the Secretary of State for India, in reference to his Despatch of the 8th December 1862, No. 42.

(True Extract.)
(Signed) J. D. Sim,
Secretary to the Government.

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1. In the Madras Presidency the disease assumes two forms, the anæsthetic and the tubercular; but these forms occassionally co-exist in one person, and are, in my opinion, only varieties of one blood disease. The malady is first recognizable by its local symptoms.

The anæsthetic form shows itself by tawny discoloration of the skin in spots of irregular outline, commonly about or near the hand or foot; these soon become insensible to pricking or pinching, and this numbness gradually spreads. Then ensues local ulceration about the fingers or toes, commencing, generally, with a bleb, which soon bursts, showing a round glazed ulcer. This may heal, and leave a white cicatrix, or the phalynx anterior to the ulcer may slough away. Occasionally fingers and toes are successively removed by interstitial absorption, until only stumps remain.

The tubercular form begins with increased sensibility and itching in bronze-coloured spots, generally on the face; then follow tubercles about the lips, nose, and ears, loss of hair of face, thickening of ends of fingers and toes; then the tubercles break down, and foul ulcers are formed.

2. This disease appears at all ages, from childhood to senility. It may, occasionally, be recognised by a peculiar smell exuded by the leprous body. The first local symptoms of the anæsthetic form are discoloration and numbness, in spots, on the limbs; of the tubercular, itching and increased sensibility, in spots on the face.

3. A very large majority of lepers are from 20 to 50 years of age.

In India this affection is extremely chronic, not materially shortening life, and very rarely proving fatal by its direct effects, but by inducing disease of the bowels or lungs.

4. In the leper hospitals of which I knew anything, the male inmates outnumbered the females as three to one; but this may arise from an indisposition on the part of the latter to resort to such institutions.

5. It is much more common in the black than in the colored, and in the colored than in the white population. There are no reliable data by which the relative proportions can be even approximated.

6. There is no reliable Census of any Indian population from which accurate replies to these questions can be deduced.

This disease, as well as elephantiasis, is most common on the low, damp, Malabar coast, particularly about Cochin, and affects most the poorer classes; but no rank, caste, occupation, employment, or mode of life affords complete exemption from it. Rice and shell-fish are, there, the staple articles of food. The sanitary condition of the dwellings, towns, and villages is inexpressibly bad, but not worse than in most other parts of India; and this dreadful disease is known, more or less, throughout the whole peninsula.

7. The progress of this disease is certainly retarded by improving the hygienic condition of the sufferers, as regards cleanliness, ventilation, and food; and I infer that the liability to contract it might be diminished by the same process.

8. The disease is hereditary, but in a moderate degree. When I was in the habit of visiting the Madras Leper Hospital, half of its inmates had no relation in any degree affected with the disease.

9. Leprosy is closely allied to elephantiasis Arabum (or Cochin leg), and the two affections frequently co-exist; but I know of no other disease on which it is in any way dependent.

10. The disease is, to a certain degree, contagious, and the attendants on lepers suffer from it in a greater proportion than the general population; but a large majority of them escape, though undergoing any amount of exposure to contagion. Marrying lepers for money is said to be sometimes perpetrated, and with impunity.

11. No restrictions are imposed on lepers in India.

12. That provided in India is lamentably insufficient. Lepers must always be excluded from general hospitals on account of there incurability, if for no other reason.

13. No answer.

14. No answer.

15. Hygienic and dietetic treatment may retard the progress of the disease, but I believe it to be incurable.

16. No answer.

17. No answer.

W. N. Innes M.D., Deputy Inspector General of Hospitals.

Corfu, 1863.

No. 39.

BOMBAY PRESIDENCY.

Extract from the Proceedings of the Government of Bombay in the General Department, dated 21st July 1863.

Read the following papers:—

Letter from the Dr. M. Stovell, Principal Inspector General Medical Department, to the Secretary to Government General Department, dated 20th June 1863, *No.* 1411.

Sir,—With reference to Government Resolution No. 92, of 23d January last, I have the honour to forward the accompanying replies to the interrogatories respecting lèprosy, by Assistant Surgeon H. V. Carter, of the Jamsetjee Jejeebhoy Hospital; and as Dr. Carter has, during the last year or two, paid special attention to the subject into which the Committee of the Royal College of Physicians, London, has been appointed to inquire, I thought it would conduce most to the elucidation of the subject if I refered it to him.

2. I will not fail hereafter to forward any additional information that may be obtainable.

Introductory Remark and Replies to Interrogations by Assistant Surgeon H. V. Carter, of Her Majesty's Bombay Army, dated May 1863.

Introductory Remark.—The replies to the following questions have been as much condensed as possible, as it seemed desirable to make them; but further information on almost every

point to which the questions relate will be found in the 8th volume of the Transactions of the Medical and Physical Society of Bombay, new series, p. 1., *et seq.* A copy of this volume will be forwarded, as usual, to the Royal College of Physicians, London; and I have already transmitted to the Registrar of the College a reprint (pamphlet form) of the article above referred to, for the further information of the Committee on Leprosy.

I may perhaps be allowed to add, that very little further knowledge of this terrible scourge is likely to be obtained, unless it is made the subject of special study, as was done a short time back in Norway, with some striking results.

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1. Leprosy is well known in most, if not all, parts of India; it prevails extensively in the Bombay Presidency, and may be said in some localities to be a common disease.

a. Three forms of the disease may be readily distinguished, viz.:—

1. An eruption on the skin, probably allied to lepra (Græcorum), and accompanied by anæsthesia.

2. Anæsthesia of the skin of the face, ears, and extremities, followed in the latter case by atrophy, interstitial absorption, and, occasionally, ulceration of the benumbed parts, notably of the fingers and toes.

3. Tumefaction or tubercular thickening of the skin, principally of the face, also of the extremities; less marked on the trunk.

The last-named form is that best known in the west, but is not the commonest here. It is generally termed tubercular leprosy. It is the elephantiasis, leontiasis, &c. of the Greeks, the lepra of the translators of the Arabian writers, the jezam, da-al-asad (lion-disease) of the Arabs, and the ructa-kusta, ructa-pitia, maha-viadhi, of Hindoos.*

The second form above mentioned is the most frequent; it is the guleet-kusta, sunbahiree, of the Hindoos, and has been distinguished as anæsthetic leprosy, articular leprosy, &c.

The first-named form is not distinguished as yet by modern writers; it appears to be the leuke of the Greeks, the baras or beres of the Arabs, and, possibly, the berat lebena of the Hebrews. One variety is the white leprosy (or shvet-kusta) of this country; the black leprosy being the tubercular.

In my opinion, the distinction of this form of the disease is not only warranted but necessary.

b. These several forms are only varieties of one common morbid state, as is shown by their seldom occurring separately in cases at all advanced, their being, one or other, almost always combined at certain stages; e.g., the first with the second, the third with the second (may be the first also). The latter or second form appears to be the typical and most invariable.

All varieties occur simultaneously in the same locality, under the same circumstances, and I have known different members of one family to be differently affected with each. A parent, too, affected with one form will transmit another to the offspring.

c. With the possession of the pamphlet referred to, already transmitted, it will be superfluous to detail in this place the symptoms of leprosy. *Vide* pp. 4, 25, 44. I would also mention an article on this subject published in the British and Foreign Medico-Chirurgical Review for January 1863.

2. The first part of this question is answered at page 27 of the pamphlet.

The second part, as regards the eruption, in almost all the cases detailed from page 6 to page 14; with respect to the anæsthetic form, from page 30 onwards, and at page 51 to a case presenting the incipient stage of tubercular leprosy.

With regard tu the so-called "prodromè," or general symptoms ushering in the disease, I am unable to confirm what has been advanced by others. Cases of threatening leprosy are rarely seen at a public institution, but the result of all the inquiries I have made on the subject is to the effect that there are no special or invariable premonitory symptoms, so called.

What the patient himself or his friends see, often accidentally, gives the first intimation of the onset of the disease.

3. As the two chief varieties of leprosy appear to be inimical to life in different degrees, questions so general as the above are not susceptible of a precise reply; taking, however, the disease as a whole, its duration may, when not extensive, extend to upwards of 20 years; it is generally much less, 5, 10, or 15 years being perhaps the usual periods; but there is not, to my knowledge, either a limited course, or a uniform termination, to the affection; much will depend upon the outward circumstances of the patient.

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* *Vide* Table of Synonymes, p. 18 of the pamphlet.

I am of opinion that the tubercular form of leprosy soonest induces a fatal issue, evidencing, as I also think, a deeper taint than the more common, in India at least, viz., the anæsthetic form, in which life may continue for the longest of the periods named above. I have seen no case in which the eruption alone appeared to materially shorten life.

In the town of Bombay the mortality seems to reach its maximum about 30 years of age. I have never witnessed what has been described as the acute form of tubercular leprosy.

4. In general terms it may be said that males suffer much more frequently than females from the anæsthetic form; the same is the case with the tubercular; not so with baras, as it would appear, but my data are limited.

The average proportion of males to females affected may be said to be about four to one.

In a late period of twelve years, in Bombay, 543 deaths from leprosy have been recorded, of which 409 were males, 134 females, being a proportion of three males to one female.

5. Many data, yet wanting, would be required to answer this question. The proportion of the various races in districts where leprosy prevails it would be very difficult, if not usually impossible, to ascertain; but it may be said that no one of the indigenous races is exempt, and, so far as I know, no one of them is especially liable.

The resident coloured population seems as much predisposed as the pure native. The European element is very seldom indeed attacked; one or two instances have been mentioned to me of Europeans (English?) becoming lepers; but of others mentioned by authors the individuals have been natives of countries in Europe where leprosy still prevails.

As regards the Presidency town, the following extract from the mortuary returns, 1860, which is quoted at p. 3, may be added:—

"Proportionally to the total deaths, leprosy is most prevalent among the native Christians, "next among the Marathas and low-caste Hindoos, particularly the latter; then follow the "Musselmans, the Parsees, the vegetable-feeding Hindoos." Jews and Europeans have been exempt from the disease. With respect to this estimate, I must express my opinion that the general average mortality of the various races mentioned above will be found to greatly resemble the comparative mortality from leprosy amongst them, so that it would not be safe to wholly rely on the estimate.

The fact that no one of the Jewish race has died here from leprosy for some years past I have noticed in my remarks on the "Leprosy of the Jews," p. 21.

6. As ordinarily seen, leprosy appears almost confined to the lower orders of society, but its range is by no means limited to any caste or social condition; high caste and well-to-do natives are sometimes lepers, although the instances are rare.

a. The greater number of lepers are inhabitants of small hamlets or rural districts, but many also of the towns and larger villages; these districts are mostly found on the sea-board, but it would be erroneous to suppose that leprosy does not extend inland. I am of opinion that the disease is not essentially dependant on the conditions of a seacoast residence. It is not limited to low altitudes, as it occurs on the Deccan, but it is probable that it would seldom be found to arise de novo in cool and dry localities; at least it may be said that most localities where it now prevails are of an opposite character.

b. I am not aware that the sanitary condition of the dwellings, &c. in localities where leprosy prevails differs in any way from that of Indian rural places generally. It need hardly be said that, according to European notions, it is not favourable to good health.

c and *d.* Nor has it any way appeared that the personal habits of lepers, previous to the appearance of the disease, differs from their neighbours. The same remark applies to diet and general way of (*e*) living; nor do I think that their occupation or employment will be found to exercise any influence; so that it may be said that either information connected with the above circumstances is deficient, or that we are to look for the essential cause of leprosy to other conditions, which, being absent, the disease never appears, and which, being present, it does not fail to appear.

Certain points should, however, be more closely investigated, such as the occurrence of leprosy in districts liable to fluctuations in the supply of food, or remarkable for the kind of grain or pulse, &c. used as food, or of which the inhabitants are great fish eaters,* have the use of salt in abundance, or otherwise, &c.

The geological character of the localities and nature of water supply should be also especially investigated.

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* *Vide* note page 2 of the pamphlet.

Under these and numberless other points are fairly ascertained, replies to such questions as Interrogatory 6. can be little better than statements of opinion.

7. Leprosy should be viewed as a cachexia of the system, or dyscrasia, comparable in some particulars to syphilis or the strumous; it may therefore be said that depressing or deteriorating influences generally will hasten the progress of the disease. It so happens that the poorer lepers are mercilessly exposed by their friends to exposure and want, and hence, no doubt, it is amongst them we find revealed the most lamentable effects of the disease. I have remarked on this subject in the publication before referred to.

8. Admitting that the proofs of the hereditary nature of struma and syphilis are conclusive, it must also be admitted that leprosy is of the same nature, since the proofs are the same in kind.

I have known several instances like that referred to in the second question.

9. There is no direct evidence that leprosy is either dependant on or connected with syphilis, so far at least as is ascertainable; but I must own that there are considerations which induce me to regard the two affections as in some way essentially related.

The subject is too wide a one for discussion here.

10. I have not met with any evidence of the contagious nature of leprosy, such as would bear sifting, and then be conclusive.

c. Not in my opinion.

11. A harsh custom prevails in the lowest orders of the population of expelling from their doors any of their offspring affected with leprosy. Such unfortunates there swell the ranks of wandering mendicants, or make their way to towns where hospitals exist which will admit them; many reach Bombay. In the dhurumsallas of the country lepers are not segregated; in Bombay they are associated with the blind, and the community generally do not evince anything like a dread of the leper, as they are allowed to wander freely in the streets. They also attend festivals, &c.

12. I do not find that there exists in the Bombay Presidency, nor, so far as I know, ever has existed, an institution like the lazarettos which the Dutch established in some parts, *e.g.*, at Cochin, which is still maintained by the Madras Government. There is no public provision made here for the leprous poor, except in the general hospitals. In some few of these lepers are not admitted, but probably in most they are, though not always as a separate class of patients.

In Bombay lepers are received in both the Native General Hospital (the Jamsetjee Jejeebhoy) and the dhurumsalla, a home for the homeless, under the conduct of the Local District Benevolent Society. In the former case they are not strictly segregated, and in the latter the leprous and blind together form the mass of resident poor.

Recommendations have, at various times, been made to Government, for the establishment of asylums, as, for instance, in 1857, by the resident surgeon at Baroda, and one such might, I think, be fairly claimed for Bombay.

With regard to the latter part of this interrogatory, I cannot furnish any information concerning general hospitals in the provinces. They are certainly more or less well adapted for their purpose, and, so far as I have learnt, the lepers are treated as patients. The same is the case in the Jamsetjee Jejeebhoy Hospital, but the dhurumsalla before mentioned is rather a home than a hospital, although medical treatment is afforded when required by an apothecary in the Government service, who, however, is non-resident; but the majority of leprous "sick" find their way to the Jamsetjee Jejeebhoy Hospital, and many end their days there. In the dhurumsalla a small sum, amounting to two or three pence, with about two pounds of rice, is distributed daily to each leper, which serves for support in certainly the majority of cases, however scanty the supply may seem, and is, indeed, in the present state of things.

There is therefore, I think, room enough in Bombay for better provision for this miserable class of poor, such at least as is afforded in the other presidencies.

13. I must refer to the reply to the last interrogatory for what has been ascertained on this subject. Government does not directly contribute to the maintenance of lepers, though it does so indirectly to some extent. In the Jamsetjee Jejeebhoy Hospital about 60 lepers are annually admitted as patients; in the dhurumsalla the residents number 100, supported by private charity. At a hospital in Ahmedabad, similarly constituted, I believe, to the Jamsetjee Jejeebhoy, 72 cases of leprosy were admitted in 1861. Others are treated at the Guikwar's Hospital, Baroda, &c.

14. The result of my own brief experience and some inquiries I have made is that leprosy is not on the increase at present, but probably rather the reverse.

It would be interesting to ascertain the influence of scanty harvests, and such seasons of public want, also of local changes, as drainage, irrigation, &c., on the prevalence of leprosy; but there is not to be found in official records any data for determining such questions.

I would respectfully submit that if the subject is deemed of importance a special commission be appointed to investigate it. In almost all scientific matter general inquiries have to be specially treated, de novo as it were.

15. Leprosy is a constitutional affection having a peculiar local manifestation; hence it resembles syphilis, struma, &c., and, certainly, not more than they, is susceptible of spontaneous amelioration. I doubt if organic changes, especially in the nerves, are ever entirely restored.

16. The population of the British States under the Government of Bombay is estimated to be 11,790,042, and that of the Native States in the Presidency 4,460,370.

At present, however, I believe, little use can be made of these figures.

An approximate Census of the city of Bombay was taken in May 1849, and the population was then estimated at 566,119; but little reliance, however, is placed on these figures, as the population is remarkably fluctuating, and the numbers must have increased since 1849.

There is at present a complete and well-arranged registration carried on in Bombay, which would seem to leave little to desire on this score. It was commenced, for deaths at least, in 1848; and since that date to 1860 inclusive (12 years) no fewer than 543 deaths from leprosy have been registered, being an average of 45 per annum.

17. On account of the little attention the disease has at any time excited in India (Bombay, at least), few data exist for the determination of this question.

The following facts are chiefly from my own notes:

Placed in order of furnishing most cases, the following districts may be named:—

1. The Concan generally.
2. Guzerat.
3. The Deccan and table-land.
4. Rajpootana and
5. Kattiawar.
6. Kutch.
7. Scinde.

(1.) The disease is certainly common in most parts of the Concan, particularly to the south and east of Bombay. In some villages the proportion of one leper to 80 to 100 total inhabitants is certainly not excessive.

In 100 cases of leprosy now in the dhurumsalla, no fewer than 14 came from a small fishing town 10 miles south and the immediate neighbourhood, 12 from a similar locality nearer Bombay, 10 from another more inland, 10 from a similar fishing town of small size, nine patients from two others on the coast, and so on, evidencing, as I think, a degree of prevalence well warranting the attention of both official and professional men.

Names of places.	
Concan.	Vingorla.
Bombay.	Chiploon.
Herni and neighbourhood.	Mhar.
	Bhewnday.
Alibagh.	Goa.
Panwell, &c.	Bhencal.
Nagotna.	Nausari.
Ouran.	Maundvi.
Rutnagherry.	Basscin.
Bankote.	Salsette.
Shapoor.	&c. &c.

In my notes the names are found of several hamlets of small size furnishing one or more lepers; and, I may add, the experience of the Jamsetjee Jejeebhoy Hospital and the male dispensary under my charge confirm the above remarks.

2. In 1836, Gibson notes, "the disease is frequently met with in its varied and always loathsome shapes, being more common in the southern parts of Guzerat." In 1820, Marshall, in an admirable description of a small district in Guzerat, west of Baroda, states:—"Leprosy is not uncommon, most villages of 100 houses contain two or three cases."

In 1857, Stratton, resident surgeon at Baroda, found leprosy very common, and suggests the erection of a leper asylum and dispensary on the south side of the town.

In the report of the Hutteesing and Premabhai Hospital at Ahmedabad, Wyllie, in 1861, states "that 72 cases of leprosy were admitted, and that the patients often come from "distant provinces, notably Rajpootana and Kattiawar." The proportion of cases coming from Guzerat which I have seen is large enough to show the comparative frequency of leprosy in that province and around.

3. On the whole extent of the table land leprosy prevails, but, as Gibson remarks (of the more southern districts), is " by no means so common as in Guzerat or on the coast." I have several memoranda of cases from Sattara, Sholapore, Belgaum, Poona, Nassick, and we may gain a fair notion, probably, of the extent of the disease from the description of a small village near the last-named locality given in an official report:—" In Khoregaon are 199 inhabitants, men, women, and children, and one man has black leprosy."

4 and 5. To these we may add Khandeish; but leprosy is probably less common in all than in the Concan, &c.

6 and 7. The absence in official works of any reference in these large provinces is rather striking, and would seem to imply a much less frequency of it; a point worthy, I think, of further notice.

Leprosy is very prevalent in the Mofussil, in Oude, Dacca, &c., and, I believe, also in the Punjaub.

Assistant Surgeon *H. V. Carter*, Bombay Army.

Resolution.—Copy of Dr. Stovell's letter and of Dr. Carter's replies in original to the interrogatories drawn up by the Royal College of Physicians might be forwarded to the Secretary of State, with reference to his Despatch No. 34, dated 8th December last.

2. The reply to Interrogatory No. 14 appears to be the only one which requires consideration on the part of Government at present. Before any Commission is appointed, the Principal Inspector General should be requested to circulate copies of the interrogatories to all the Deputy Inspectors, Civil Surgeons, and Superintendents of Vaccination, which he does not appear to have done, and he should be asked to condense and summarise the whole of the information he may thus obtain upon the subject.

An Appeal on behalf of the History of Leprosy, by Professor Rud. Virchow, of Berlin, dated 18th April 1863.

It is now several months since I appealed to physicians, historians, and travellers to assist me in composing a history of leprosy (lepra Arabum, elephantiasis Græcorum), and I must gratefully acknowledge having received very abundant contributions from many quarters. I have already published a portion of those observations, which have especial reference to leprosy in Germany, in the 18th volume of my Archives for Pathological Anatomy and Physiology and for Clinical Medicine; other communications are in the press, and will appear in the 19th volume of the Archives. Many other facts, which relate to foreign countries, and to questions specially of medical, geographical, linguistic, or civilizational interest, I must put aside for the present, on account of their too great bulk.

Meanwhile, however, I cannot dispense with the continual assistance of other investigators; and since a personal correspondence cannot be carried on with unknown friends, I once more choose the way of publicity. If there is still any occasion to refer to the great importance of the subject, a glance at the excellent monograph which Dr. Aug. Hirsch has published concerning leprosy in the second part, which has just appeared, of his Manual of Historico-geographical Pathology, will speedily bring conviction to the mind of everybody. A malady which once pervaded the whole world, which even now attacks thousands in every quarter of the globe, and to the ravages of which the most ancient historical records bear witness, is certainly worthy of the most zealous study.

I will now, first of all, beg leave to repeat the questions which I have already published:—

A. Lazarettos (Leper Hospitals).

Do you know where there are any lazarettos still to be found? How old are they? How many patients do they receive? What are the regulations with respect to admission, and what is the plan followed in the administration of these establishments?

2. What places formerly possessed lazarettos? When were they founded? How large were they? What were their statutes? When were they turned to some other purpose or suppressed?

B. Leprosy.

1. Where does leprosy (lepra Arabum, elephantiasis Græcorum, spedalskhed) occur?
2. Where did leprosy prevail? and when was it first, and when last, mentioned?

3. What forms of leprosy have been observed? (Lepra tuberculosa, anæsthetica, mutilans, articulorum? morphæa?) Are any definite relations known to exist between morphæa and the other forms of lepra?
4. Does the disease occur endemically or sporadically? Is an increase or a decrease in the number of cases observed?
5. To what causes is the disease attributed?
   (a) Inheritance?
   (b) Contagion?
   (c) Climate? (Humidity of atmosphere and soil?)
   (d) Food? (Fat? Fish? Salted, or what kind of fish?)
6. Is there any known treatment for leprosy?
7. Are there any peculiar laws affecting lepers? Solitary confinement? Prohibition of marriage?
8. Are there any literary, private, or official reports concerning the disease?

In continuation, I would remark that there still remain several large gaps in the history of leprosy in Germany; that from Austria, in particular, scarcely any details have as yet been obtained with regard to the state of the lazarettos; and that with respect to what occurs in Westphalia, Hesse, Hanover, Oldenburg, Holstein, and Eastern Prussia, next to nothing is at present known. Is it not allowable to expect that in these countries also sufficient interest will be taken in a matter which can only be settled by the co-operation of many, to enable us to obtain at least an approximate idea of the real state of things?

The foundation of lazarettos (leper hospitals) was essentially an ecclesiastical affair. It rested also in a great measure with the clergy whether lepers were admitted into these establishments, and separated from the rest of the community. But to what extent this was their exclusive right, and especially what was the case in Germany, is still involved in great obscurity; for most authors have, by an illogical juxtaposition of what was separated by centuries and many countries, thrown the whole matter into confusion. With regard to Germany, in particular, it would be desirable that it should be accurately ascertained whether the same ceremonial and the same religious ideas which obtained in France, for example, prevailed also amongst us. This might perhaps be determined in places where there was a great concentration of ecclesiastical authority, as, for example, in Mayence, Cologne, and Trèves, if the archives, rituals, &c. were consulted. Questions are connected herewith which are of great importance in a civilizational point of view.

Out of Germany, it is especially with regard to the Slavonic countries that nearly all historical information is wanting. When, for example, Richter, in his History of Medicine in Russia, vol. i. p. 245, relates that leprosy first appeared in Russia in 1426, i.e., at a time when it was already beginning to disappear elsewhere, this is in itself extremely improbable, but at the same time, if true, extremely valuable, as regards the history of the disease. Everything, therefore, which is known with regard to Poland, Russia, Galicia, &c., offers twofold interest, because it at the same time involves one of the capital questions concerning the nature of the disease.

Finally, with regard to the geographical distribution of leprosy at the present time, Hirsch and Mühry have already collected a large number of facts; yet even in this quarter there is still a great deal to be done. With respect to the interior of the continents, and especially Asia and Africa, we have scarcely any information; and even concerning China, where the disease is said to be so general, our knowledge is most superficial. From America, too, there is extreme difficulty in obtaining even official documents. In all these instances much might be done, not only by the agency of travellers, but also by means of diplomatic and commercial agents, of merchants and physicians. I only hope that every one will rest assured that any contributions, however small, will prove acceptable.

Extract from the Proceedings of the Government of Bombay in the General Department, dated 19th December 1863.

Read the following papers:

Letter from Dr. M. Stovell, Principal Inspector General Medical Department, to the Secretary to Government General Department, dated 24th November 1863, *No.* 2602.

With reference to Government Resolution No. 1089, of 21st July 1863, I have the honour to submit the accompanying information respecting leprosy, which I have had condensed and summarized from the answers returned to the interrogatories of the Royal College of

Physicians, London, copies of which were circulated to all the Deputy Inspectors General of Hospitals, the civil surgeons, and the superintendents of vaccination, in accordance with the orders of Government quoted above.

2. For the information thus obtained with respect to this disease, in addition to that already so fully and ably furnished by Dr. Carter, I am indebted to the following Medical Officers :—

Drs. Maitland, Wyllie, Steinhaeuser, Lord, J. G. Nicholson, Bean, Mills, Beatty, Martin, Shepherd, Cook, Bell, Johnson, and Kearney; sub-assistant surgeons Burjorjee Ardaseer and Kaikusroo Rustomjee; assistant apothecary V. de Souza; and first hospital assistant Rabajee Moray.

3. The other medical officers to whom the interrogatories were forwarded replied generally, that, having only met with occasional cases of the disease, their experience was too limited to enable them to prepare any report on the subject.

4. But it may be stated that the present reference has elicited but very few additional facts or observations of importance, and that the history of leprosy in the Bombay Presidency is complete in the several published works of Assistant Surgeon H. V. Carter, M.D.

5. A few interesting photographs of the disease, prepared and furnished by Dr. J. G. Nicholson, are herewith forwarded.

Summary of the Answers to Interrogatories.

1. All the observers agree that leprosy is well known in the Bombay Presidency, including Aden, but it is said to be rather uncommon in Sind.

a. Those observers who write from sufficient experience of the disease distinguish two forms of leprosy, and Dr. H. V. Carter (whose replies are much fuller than any others) speaks of three varieties, viz., first, white leprosy, or shvet kusta, probably a variety of the leuke of the Greeks, the baras or beres of the Arabs; it is also called khoor by the Sindees: second, guleet khusta, sunbahiree, of the Hindoos; it corresponds with anæthetic leprosy, articular leprosy, &c.: third, tubercular leprosy, elephantiasis, leontiasis, &c., of the Greeks, the lepra of the translators of the Arabian writers, the da-al-asad (lion disease) of the Arabs, and the ructa kusta, ructa pitia, maha viadhi, of Hindoos. The first and second forms are commonly confounded under the name of white leprosy; the third all agree in naming black leprosy.

b. The unanimous opinion is that the varying forms of leprosy are merely different phases of one common morbid state. It seems to be not uncommon for a leper to be affected with two forms at once. Dr. Bell, writing from the southern Muratha district, while confessing that his experience of leprosy has been extremely limited, says, "I had always been of opinion that there were two forms of the disease, viz., white and black leprosy, but from careful investigation I now find that there is no affinity between them; that which I regarded as white leprosy is a distinct disease, never passing into the jujam, or leprosy proper of the natives. The Mussulman name for it is buras (baras), the murathee kode. In character and appearance it strongly resembles the lepra vulgaris of many authors.

c. In reply to this query, Dr. Carter refers to his pamphlet on leprosy, already forwarded to the Royal College of Physicians. The following is a summary of the symptoms he enumerates, with a few additions from Surgeon Steinhaeuser's replies :—

Form 1.—An eruption on the skin, accompanied by anæsthesia.

Form 2.—Anæsthesia of the skin of the face, ears, and extremities, followed in the latter case by atrophy, instertitial absorption, and, occasionally, ulceration of the benumbed parts, notably of the fingers and toes, with little or no constitutional disturbance. Large circular superficial ulcers may form on the lower extremities. The affected finger and toes become contracted, the joints enlarged, the ends of the fingers broad, flat, or clubbed.

Form 3.—Tumefaction, or tubercular thickening of the skin, principally of the face, also of the extremities; less marked on the trunk. The affected skin is discolored, dark-bronzed, shining, its sensibility much diminished or entirely lost. The mucous membrane of the mouth ultimately becomes affected, and the voice altered. Contraction of the fingers and toes is a frequent symptom, and the phalanges may drop off from ulcerated fissures forming over the articulations, or from sphacelation supervening on ulceration; the entire hand or foot may thus be lost. The constitutional disturbance is much greater in this than in the previously described form.

Dr. J. G. Nicholson speaks of a variety characterized by copper-coloured blotches, with great heat of surface, intolerable itching, and an impaired state of health; it seems probable that these symptoms may have been observed in the early stage of cases which would ultimately belong to Dr. Carter's third form.

2. The general opinion seems to be that the time of life at which the disease most generally manifests itself is between the ages of 15 or 20 and 30 years. Dr. Carter says it occurs in comparatively few cases after 40.

Dr. Carter doubts there being any special or invariable symptoms which can be considered premonitory of leprosy. He says that what is seen, often accidentally, by the patient or his friends, gives the first intimation of the onset of the disease. The following are the symptoms first seen and felt in this disease :—

Anæsthetic leprosy.—Pricking, shooting, burning pain in the fingers, toes, susceptibility to cold, and a feeling of heaviness and weakness, with tremor, in the part. Fever is not a special attendant on leprosy. These local sensations are frequently so slight as to pass unnoticed by the patient, the numbness being then the first symptom observed, and so the disease goes on to more advanced stages.

Tubercular leprosy.—An eruption in the mixed form is the first symptom, then the face becomes tumified, afterwards the trunk and extremities.

3. Dr. Carter is of opinion that the disease has not a limited course. Dr. Wyllie speaks of it becoming fully developed in from 3 to 6 years.

Dr. Carter says that in the town of Bombay the mortality seems to reach its maximum about 30 years of age, after a duration of 5, 10, or 15 years.

Dr. Shepherd, from inquiries among the native practitioners of Surat, writes—"The majority labour under leprosy for 30 or 40 years before they die, so that, taking the age at which it first manifests itself to be from 15 to 20 years, and adding 30 or 40 years to that, the death-age will be between 45 and 60."

4. Dr. Carter says that males suffer much more frequently than females from the anæsthetic and tubercular forms, but that, judging from limited data, it is not so with baras.

He gives the average proportion of males to females affected as four to one ; Mr. Shepherd as ten to one ; Dr. Wyllie as twelve to one.

5. Dr. Carter says that many data yet wanting would be required to answer this question, but that it may be said that no one of the indigenous race is exempt, while no one of them is especially liable. He further observes that the resident colored population seems as much predisposed as the pure native, but that Jews are seldom attacked, and Europeans very seldom indeed.

Dr. Steinhaeuser's experience at Aden confirms Dr. Carter's statements as to the immunity enjoyed by Jews and Europeans, and tends to prove that leprosy is more common among the mixed negroid races than any others; Arabs, Somalees, Mussulmans (not Arabs) from India, the far east of the Turkish dominions, and elsewhere, Hindoos, Parsees, and Native Christians, who constitute the very mixed and fluctuating population of that place.

6. The unanimous testimony is that the lower orders are the portion of society in which the disease is of most frequent occurrence.

a. Dr. Carter says the greater number of lepers are inhabitants of small hamlets or rural districts, but many also of towns. The districts are mostly, but not exclusively, on the seaboard. The disease is not limited to low altitudes. He further observes that most of the localities where leprosy now prevails are hot and damp, and Drs. Wyllie and Steinhaeuser add, malarious.

b. All the observers are agreed that the sanitary condition of the dwellings of lepers and of their immediate neighbourhood is not favourable to good health, but not different in any way from that of Indian rural places generally.

c. The same remark applies to the query about their habits of life as to cleanliness.

d. Some of the observers make the same reply to this question ; but there seems to be an impression on the minds of Dr. Carter and Messrs. Steinhaeuser and Shepherd that there is some foundation for the popular idea that a diet chiefly composed of milk and fish tends to produce the disease. Dr. Steinhaeuser states that under this idea the Somalee tribes, among whom he has seen cases of the disease, never eat fish under any circumstances. In addition to milk and fish, bad grain and oil are spoken of by Mr. Shepherd as predisponents to the disease.

e. All seem to agree with Dr. Carter's remark, that the occupation or employments of lepers will be found not to have exercised any influence in producing the disease.

7. Any conditions or circumstances tending to lower the general health accelerate or aggravate the disease when it has once manifested itself in an individual.

8. Opinions are divided as to whether this disease is often hereditary. Dr. Carter, whose opinion must be allowed to have most weight, thinks it is.

Many instances are spoken of where one member only of a family has been affected, while all the other members remain free from any trace of it.

9. The numerical balance of the observers is decidedly against the belief that leprosy is in any way dependent on, or connected with, syphilis, yaws, or any other disease. Dr. Carter, however, thinks that leprosy and syphilis are related, while Dr. Wyllie takes a similar view of leprosy and scorbutus.

10. None of the observers appear to have obtained conclusive proof of leprosy being contagious or transmissible by sexual intercourse. The natives generally do not think it so; but in the Concan and by the Arabs it is looked upon as contagious; black leprosy at least.

11. There is no restriction imposed or segregation enforced in respect of lepers in the Bombay Presidency, but they are often shunned, even by their relatives, on account of their loathsomeness; and in the Southern Muratha district, where the disease is generally believed to be contagious, lepers are prohibited from coming into contact with any person not suffering from the disease, and in some cases are expelled their castes. When a leper is discovered in a village, it is a common practice for his neighbours to construct a separate hut for him out of the village, and to compel him to live there on alms.

12. With the exception of the "leper asylums" at Rajcote and Bombay, no special public provision is made for the reception and treatment of the leprous poor. They are admitted into most of the general hospitals. There is one asylum (dhurumsalla) in the town of Bombay which they share with the indigent blind, and another in Kattywar supported by the native chiefs. The general hospitals are more or less well adapted to their purpose.

13. The reply to the last interrogatory will show that nothing definite can be stated as to the number of leprous persons maintained at the public expense in the Bombay Presidency.

14. It is a general opinion that leprosy has not been of late years on the increase in the Bombay Presidency; indeed Dr. Carter, and one or two others, believe the reverse to be the tendency at present. Dr. Shepherd says that an impression is gaining ground in Surat that since large wages have been given for labour by the railway company leprosy has been slightly on the decrease.

16. Several of the observers speak with some degree of confidence of the power of hygienic and dietetic measures in arresting or even promoting a cure in leprosy; but all concur in the utter inefficiency of medicinal treatment for those ends.

16. In reply to the query as to the population of the Bombay Presidency, it is stated that the number of inhabitants in British States under the Government of Bombay is estimated at about 12,000,000, but that little reliance can be placed on these figures.

17. In reply to this question, as to the townships in which leprosy prevails most, and the numbers of lepers and the population in each of such townships or districts, Dr. Carter states that, on account of the little attention the disease has at any time excited in India (Bombay at least), few data exist for its determination.

He places the following districts in the order of furnishing most cases:—

1. The Concan generally.
2. Guzerat.
3. The Deccan and Table-land.
4. Rajpootana.
5. Katywar.
6. Kutch.
7. Sind.

In some villages of the Concan the proportion of one leper to 80 or 100 total inhabitants is certainly not excessive.

The sub-assistant surgeon in charge of the Belgaum charitable dispensary gives translations of many of the names applied by natives to different forms and stages of leprosy, and Dr. J. G. Nicholson furnishes four photographs of the disease.

Resolution.—A Copy of Dr. Stovell's letter, with enclosures, printed, to be transmitted to the Home Government, in continuation of the despatch from this Government No. 19, dated 23d July 1863.

No. 40.

THE BENGAL PRESIDENCY.

The very numerous Returns from the Government of India, in compliance with the Despatch of the Right Hon. Sir Charles Wood, Bart., M.P. and G.C.B., Her Majesty's Secretary of State for India, to His Excellency the Right Hon. the Governor General of India in Council, dated 8th December 1862, occupy a folio volume of 500 pages, printed during the present year (1865) at Calcutta, and embrace replies from a vast extent of our Eastern Empire, as will be seen from the following Index, in which the names are arranged alphabetically :—

ASSAM.

Durrung - -	From Sydney Lynch, Esq., Medical Officer.

BENGAL.

Arrah - -	From R. F. Hutchinson, Esq., M.D., Civil Surgeon.
Bancoorah - -	From H. C. Bowser, Esq., Civil Surgeon, dated 6th July 1863.
Beerbhoom -	From A. J. Sheridan, Esq., Civil Surgeon, dated 24th June 1863.
Balasore - -	From Kallypersaud Mitter, Sub-Assistant Surgeon, dated 21st June 1863.
Bhaugulpore -	From A. G. Crewe, Esq., Civil Surgeon.
Bograh - -	From J. Taylor, Esq., Apothecary, Medical Officer of the Gaol and Civil Station.
Bullooah - -	From H. M. Davis Esq., Civil Surgeon, dated 14th May 1863.
Burdwan - -	From Henry P. Williams, M.D., Civil Assistant Surgeon, dated 23rd May 1863.
Burrisaul - -	From E. J. Gayen, Esq., Civil Assistant Surgeon, No. 27, dated 15th May 1863.
Cachar - -	From B. A. Burker, Esq., M.D., Civil Surgeon, No. 26, dated 15th May 1863.
Calcutta - -	From H. B. Stewart, Esq., Officiating Medical Officer, Leper Asylum, dated 23rd July 1863.
Chumparun -	From J. M. Coates, Esq., M.D., Civil Assistant Surgeon, dated Motihari, 10th October 1863.
Cheerah Poonjee -	From J. H. Thornton, Esq., M.B. and B.A., Civil Assistant Surgeon, dated 15th May 1863.
Chittagong - -	From James Wise, Esq., M.D., Civil Assistant Surgeon, dated 18th May 1863.
Cuttack - -	From A. A. Mantell, Esq., M.D., Civil Assistant Surgeon, dated 11th June 1863.
Dinagepore - -	From S. C. Amesbury, Esq., Civil Assistant Surgeon, No. 6, dated 7th May 1863.
Dinapore - -	From D. McRae, Esq., Deputy Inspector General of Hospitals, No. 334, dated 17th July 1863.
Dorundah - -	From G. M. Govan, Esq., Assistant Surgeon, Medical Charge, Her Majesty's 35th Regiment Native Infantry, Dorundah, and Officiating Medical Churge, Civil Station of Rauchee, Chota Nagpore, dated 1st July 1863.
Fureedpore - -	From B. N. Bose, Esq., M.D., Civil Surgeon, dated 20th May 1863.
Gyah - -	From Richard Banbury, Esq., Officiating Civil Assistant Surgeon, dated 2nd June 1863.
Hazareebaugh -	From Samuel Delpratt, Esq., Civil Assistant Surgeon, dated 26th March 1863.
Hooghly - -	From John Squire, Surgeon, late Officiating Civil Surgeon, dated 7th July 1863.
Howrah - -	From Robert Bird, M.D., Civil Surgeon, dated 18th July 1863.
Jessore - -	From Dr. J. W. R. Amesbury, Civil Surgeon, No. 43, dated 16th June 1863.
Malda - -	From R. F. Thomson, Esq., Civil Assistant Surgeon, dated 28th April 1863.
Midnapore - -	From Bernard Kendall, Esq., Civil Assistant Surgeon, dated 17th June 1863.
Monghyr - -	From T. Duka, Esq., M.D., Assistant Surgeon, No. 35, dated 16th May 1863.
Moorshedabad -	From A. Fleming, M.D., Civil Surgeon, dated 1st June 1863.
Mozufferpore -	From N. C. Macnamara, Esq., Civil Surgeon, dated 12th March 1863.
Patna - -	From J. Sutherland, Esq., M.D., Surgeon Major, dated 4th June 1863.
Puruliah - -	From M. J. Ellis, Esq., Surgeon in Medical Charge, dated 30th July 1863.
Pooree - -	From J. J. Durant, Esq., M.R.C.S.L., Civil Assistant Surgeon and Superintendent of Government Dispensary, dated 18th May 1863.
Pubna - - -	From T. Parker, Esq., Civil Surgeon, No. 10, dated 26th March 1863.
Purneah - -	From P. F. Bellew, Esq., Civil Assistant Surgeon, dated 6th March 1863.
Raneegunge - -	From A. Vans Best, Esq., M.D., Civil Assistant Surgeon.
Rungpore - -	From C. W. Waylen, Esq., dated 13th August 1863.
Seebsagur - -	From M. Mookerjee, Esq., Sub-Assistant Surgeon, dated 20th March 1863.
Serajgunge -	From Jadub Chundor Deb, Sub-Assistant Surgeon, dated 25th August 1863.
Serampore -	From T. Bray, Esq., B.A. and M.B., Medical Officer, dated 21st May 1863.
Singbhoom -	From A. J .Meyer. M.D., Civil Surgeon.
Sumbulpore -	From N. Jackson, Esq., Civil Medical Officer, No. 36, dated 16th April 1863.
Tezpore - -	From S. J. Lynch, Esq., M.R.C.S., Medical Officer.
Tipperah -	From James A. Greene, Esq., M.D., Officiating Medical Officer, dated 1st May 1863.

BRITISH BURMAH.

Akyab - - -	From A. Callaway Nisbet, Esq., Officiating Civil Assistant Surgeon, No. 95, dated 17th July 1863.
Sandoway - -	From C. E. Pyster, Esq., Civil Medical Officer, No. 23, dated 17th June 1863.
Kyouk Phyoo -	From Alexander Thomas, Esq., in Medical Charge, dated 13th April 1863.
Moulmein - -	From George Marr, Esq., M.D., Civil Surgeon, No. 135, dated 16th May 1863.
,, -	From H. Greisback, Esq., M.D., Assistant Surgeon, 9th Regiment, Madras Native Infantry, dated 23rd June 1863.

CENTRAL INDIA.

Augur - -	From T. Beaumont, Esq., M.D., Assisstant Surgeon, in Medical Charge 1st Regiment, dated Camp Augur, 23rd April 1863.
Bhopawur Agency	From H. J. Cane, Assistant Surgeon, in Medical Charge, Bhopawur Agency and Malwa Bheel Corps, dated Camp Sirdarpore, 6th March 1863.
Bundelcund - -	From J. P. Stratton, Esq., Political Assistant, No. 68, dated Camp Chirkari, 11th March 1863.
Gwalior - -	From P. M. Sutherland, Esq., Assistant Surgeon, 14th Bheel Corps, and in Medical Charge, Gwalior Residency, dated 22nd March 1863.
Indore - -	From H. C. Brodrick, Esq., M.D., Residency Surgeon, dated 6th May 1663.
Nimar - -	From G. Y. Hunter, Esq., Officiating Civil Surgeon, dated Mundlaisir, 23rd April 1863.
Sehore - -	From Charles Thomson, Esq., M.D., Assistant Surgeon, in Medical Charge, Bhopal Political Agency and Levy, No. 10, dated 2nd March 1863.

CENTRAL PROVINCES.

Nagpore - -	From W. W. Hende, Esq., M.D., Civil Surgeon, dated 22nd July 1863.

HYDERABAD.

Hyderabad - -	From J. B. Fleming, Esq., M.D., Residency Surgeon, dated 23rd March 1863.

MUNNIPORE.

Sylhet - -	From H. Beveridge, Esq., on special duty in Munnipore, No. 15, dated Sylhet, 22nd February 1864.

MYSORE.

Bangalore - -	From J. Kirkpatrick, Esq., M.D., Surgeon to the Mysore Commission, dated March 1864.

NIPAL.

Khatmandoo -	From Dr. H. A. Oldfield, Esq., M.A., Residency Surgeon, dated 11th April 1863.

NORTH-WESTERN PROVINCES.

Agra - -	From C. Plank, Esq., M.D., Superintendent, Agra Central Prison, dated 21st February 1863.
,, - - -	From Mokund Lall, Sub-Assistant Surgeon, dated 22nd April 1863.
,, - - -	From J. Murray, Esq., M.D., Deputy Inspector General of Hospitals, Agra, dated 11th May 1863.
,, - -	From Bholanath Dass, Sub-Assistant Surgeon.
,, - - -	From Meer Ushruff Ally, G.M.C.B., Sub-Assistant Surgeon, in Medical Charge of the Thomason Hospital.
Ajmere - -	From T. Murray, Esq., M.D., Civil Surgeon.
Allahabad - -	From J. A. Guise, Esq., M.D., Officiating Deputy Inspector General of Hospitals, Cawnpore Circle, No. 61, dated 24th April 1863.
,, - -	From J. R. Jackson, Esq., M.D., Superintendent, Central Prison, Allahabad, dated 27th March 1863.
,, - -	From R. Cockburn, Esq., B.M., Officiating Civil Surgeon, dated 31st March 1863.
Allyghur - -	From C. E. Kilkelly, Esq., B.M., Civil Assistant Surgeon, dated 14th May 1863.
Almorah - -	From G. E. Morton, Esq., M.D., Civil Surgeon, dated 1st May 1863.
Azimgurh - -	From W. R. Hooper, Esq., B.M., Civil Assistant Surgeon, dated — April 1863.
Banda - -	From W. Keates, Esq., B.M., Surgeon Major, 7th Regiment Native Infantry and Civil Surgeon of Banda, dated 28th April 1863.
Bareilly - -	From T. Corbyn, Esq., Civil Assistant Surgeon.
Benares - -	From J. A. Dunbar, Esq., M.D., Deputy Inspector General of Hospitals, dated 21st March 1864.
,, - - -	From J. H. Cheke, Esq., M.D., Civil Surgeon.
Bijnour - -	From J. L. Stewart, Esq., M.D., Civil Assistant Surgeon, dated 23rd May 1863.
Budaon - -	From W. P. Harris, Esq., M.D., Civil Assistant Surgeon, dated 21st March 1863.
Cawnpore - -	From J. Jones, Esq., M.D., Civil Assistant Surgeon, dated 25th March 1863.
Dehra - - -	From J. Hutchinson, Esq., M.D., Civil Assistant Surgeon.
Etawah - -	From J. Sheetz, Esq., B.M., Civil Surgeon.

Furruckabad	-	From G. Grant, Esq., B.M., Civil Assistant Surgeon, dated 19th March 1863.
Futtehpore	-	From T. T. Sherlock, Esq., B.M., Civil Assistant Surgeon, dated 25th February 1863.
Ghazeepore	-	From A. Garden, Esq., M.D., Civil Assistant Surgeon, dated 11th May 1863.
Gorucknore	-	From H. Cayley, Esq., B.M., Civil Assistant Surgeon, dated 22nd April 1863.
Humeerpore	-	From C. E. Raddock, Esq., B.M., Civil Assistant Surgeon, dated 23rd March 1863.
Jaloun	-	From C. Hatchell, Esq., B.M., Civil Assistant Surgeon.
Jhansi	-	From J. C. Anesley, Esq., B.M., Civil Surgeon.
Jounpore	-	From A. J. Dale, Esq., B.M., Civil Assistant Surgeon, dated — April 1863.
Lullutpore	-	From R. K. Buckell, Esq., B.M., Officiating Civil Surgeon, dated 23rd April 1863.
Meerut	-	From J. Wilkie, Esq., M.D., Deputy Inspector General of Hospitals, Meerut Circle, No. 141, dated 26th June 1863.
,,	-	From J. D. Wylie, Esq., M.D., Officiating Superintendent, Central Prison, Meerut.
,,	-	From Nund Coomar Mitter, Sub-Assistant Surgeon, in charge of Government Charitable Dispensary, Meerut, dated 11th June 1863.
Mirzapore	-	From J. H. Lock, Esq., M.D., Civil Assistant Surgeon, dated 21st May 1863.
Mozuffernugger	-	From W. H. Kirton, Esq., B.M., Civil Assistant Surgeon, dated 23rd May 1864.
Mussoorie	-	From W. F. Clarke, Esq., B.M., Assistant Surgeon, in Medical Charge, dated June 1864.
Muttra	-	From H. S. Smith, Esq., B.M., Civil Assistant Surgeon, dated 9th May 1863.
Mynpoorie	-	From G. Bernard, Esq., B.M., Civil Surgeon, dated 30th March 1863.
Nimar	-	From G. Y. Hunter, Esq., B.M., Officiating Civil Surgeon, dated Mundlaisir, 23rd April 1863.
Roorkee	-	From R. S. Thring, Esq., B.M., Officiating Civil Surgeon, dated 12th May 1863.
Seharunpore	-	From C. T. Paske, Esq., B.M., Civil Assistant Surgeon, dated — May 1863.
Sreenuggur	-	From Rajkisto Ghosal, Sub-Assistant Surgeon.

OUDE.

Lucknow	-	From Secretary to Chief Commissioner, No. 1,395, dated Lucknow, 16th June 1863.

PUNJAB.

Bhutteeana	-	From P. A. Minas, Esq., Assistant Surgeon, in Civil Medical Charge, No. 113, dated 27th August.
Hill States	-	From A. M. Garden, Esq., Assistant Surgeon, Superintendent, Vaccination, dated 22nd June.
Lahore	-	From R. C. Bose, House Surgeon, Medical College Hospital, Lahore, dated 17th March 1863.
Loodiana	-	From W. B. Butt, Esq., Assistant Surgeon, in Medical Charge.
Lahore	-	From Assistant Surgeon J. B. Scriven, Principal of the Medical College, Lahore, No. 14, dated 24th March 1864.
,,	-	From Sub-Assistant Surgeon, Ramchurn Bose, House Surgeon, Medical College Hospital, Lahore.

RAJPOOTANA.

Bhurtpore	-	From Assistant Surgeon M. W. Mott, M.D., Political Agency, Bhurtpore, dated 28th March 1863.
Harowtee	-	From Captain W. H. Beynon, Political Agent, No. 50–12G., dated Deoli, 22nd December 1863.
,,	-	From Mahommed Naeem Khan, Native Doctor in charge of Dispensary, Jhallawar.
Jeypore	-	From K. Burr, Esq., M.D., Assistant Surgeon, Jeypore.
Jodhpore	-	From Assistant Surgeon W. J. Moore, Jodhpore Political Agency, dated Cape Mount Aboo, 25th April 1863.
Serohi	-	From Assistant Surgeon T. M. Lownds, M.D., Surgeon to the Rajpootana Agency, dated Mount Aboo, 10th August 1863.
Ulwur	-	From James E. Dickinson, Esq., Agency Surgeon, dated Tejarah, 23rd November 1863.

STRAITS SETTLEMENTS.

Singapore	-	From Surgeon Major J. Rose, Senior Surgeon, No. 49, dated 8th November 1864.

Many of the replies are very elaborate and have been prepared with great ability, while others are comparatively meagre, and a few may be regarded as *nil.*

I. BENGAL (PROPER).

Interrogatory I.

Calcutta.—Leprosy occurs in the district about Calcutta in the form of white patches on different parts of the body, hypertrophy of and tubercules on the skin; with distortion and contraction of the fingers and toes, which frequently after ulceration fall off, either partially or wholly.

a. There are; they are known by the names of "phoolie," "soonbhairie," "khorie,' and "saithburn."

b. These several forms are only varieties of one common morbid state.

c. "Phoolie" is characterised by loss of feeling in some parts of the body, the skin being being hypertrophied and of a glistening appearance, studded with tubercules.

"Soonbhairie" is characterised by distortion and contraction of the fingers and toes and general loss of feeling.

In "khorie" we usually see contraction of the fingers only, with occasionally tubercules: sensation is dull.

"Saithburn" is white leprosy, the body being covered with white patches, or the skin being almost entirely changed in colour.

Pooree or Juggernaut.—Leprosy has been known to prevail in this district for centuries. It is confined mostly, if not chiefly, to the only large town in the district, which is known by the name of Juggernauth or Pooree, and is so called after the great Hindoo pagoda or idol of that name therein situated. For the worship of this idol hundreds of thousands of poor and foot-sore pilgrims can be seen constantly treading the weary way to it, the victims of an idolatrous and designing religion; thousands dying by the wayside from exhaustion and disease; and the remainder usually returning to their homes with the germs of this and various other diseases taken up as it were on the way and engrafted on them, to be more fully developed into action by-and-by, when the period of temporary excitement has passed over, and the body falls into the succeeding and more unfavourable stages of depression and exhaustion. But, again, there are a class of pilgrims who, contracting the disease (leprosy) entirely at their homes, seek a pilgrimage to this place for the express purpose of being cured, as they hope, by offerings and other propitiatory prayers to another idol called Lokenauth (who has also a shrine set apart for him, and whose peculiar attribute is believed to be the healing of diseases of such a foul nature); but the unfortunate wretches soon finding all their expectations vain, and no good to attend their devotions, and now unable to return to their friends, from being looked upon as outcasts, and as beings visited with the curse of the Almighty, are content to remain about this place as beggars, penniless and homeless, and as associates for none but the indigent and dissolute, ready to join in every degrading crime, and early giving way to and sinking under habits of intoxication and other similar vices.

a. There are three different forms or outward manifestations of leprosy as seen in this place, distinguished and known to the people by the names of soonbeyrie or lepra anæsthetica and burra roag, literally meaning big or great disease, or lepra tuberculosa and lepra mutilans, these two forms being classed under one head, and looked upon as merely different stages or states of the same disordered condition of the blood. When a man loses his fingers and toes, and otherwise becomes a cripple or deformed object, he is then called a koorey, which means a leper.

b. These several forms of leprosy are, in my opinion, only varieties of the one common morbid state, and not specifically distinct diseases having no affinity with each other. This opinion is founded on the fact that I have seen numbers of cases where the different forms existed in the same individual at the same time, and others where a direct succession could be traced from one form into that of the other; for instance, commencing in the simple form of lepra anæsthetica in small circumscribed patches on some parts of the body, it has gradually gone on to the tubercular forms, and lastly to that of the mutilans, when from joints dropping off, &c. the unfortunate victims have become confirmed lepers. In some cases, instead of the direct ablation of the fingers and toes, a wasting or atrophy of the extremities takes place, with a shortening or contraction of the flexors of the fingers and toes, causing them to be bent on the palms of the hands and soles of the feet respectively, or otherwise distorted, while a slow destructive process goes on in and about the nails and the last joints, eventually causing some of them to drop off. There is an atrophy of the nervous system also, no doubt, in these cases, for the patient usually walks with a tottering or paralytic gait, and loses all power in the upper extremities and sensibility in the fingers and of the skin in general. His mind is likewise much impaired; a state bordering on fatuity soon appearing.

Cuttack.—

a. There are two different outward manifestations of the diseese in this district, the anæsthetic and tubercular. Both are known to all by the name of koostho or khorh. The natives generally make a great confusion of terms as regards these varieties of the disease, but the more intelligent ones clearly define the tubercular as rakto koostho, and the anæsthetic as soon-bat or kall-bat.

b. I consider these forms of leprosy to be merely varieties of one common morbid state.

c. Anæsthetic leprosy commences with cachexia, and the appearance of dull red patches on the trunk or limbs or on both. The patches vary in sizes from a sixpence to half-a-crown. They are usually round or oval in form, with a rough surface, which loses its sensibility, and from which the hairs fall off. These patches continue in their intensity for variable periods, and in time other and more serious changes ensue; the skin becomes anæsthetic, and the patches more or less lost in the surrounding parts; those that are still visible assume a lighter appearance than formerly, and become more insensible; ere long the muscles begin to waste, and the patient becomes weak and cadaverous looking. At last ulcers form upon the hands and feet, the phalanges become diseased, and the fingers and toes, and in some instances the hands and feet, drop off, so that the miserable creature is one of the most wretched and pitiable objects it is possible to conceive. In some cases ulceration extends to the fauces and schneiderian membranes, but to no great an extent. The ulcer which occurs on the soles of the feet is very indolent and highly characteristic. Superficially it is circular in form, and internally conical, the apex of the cone reaching to the bone; it discharges a thin sanies, and attracts flies, which deposit eggs, that soon become a nidus of maggots.

Tubercular leprosy is less common in this district than the anæsthetic variety, but of a much severer type. From what I can ascertain, it appears to commence by the tingling of one or more of the extremities, accompanied by cachectic symptoms; in time patches appear very similar to those in the anæsthetic form, but more generally diffused.

As the disease advances, the face, arms, and legs begin to swell and lose their sensibility; the skin becomes condensed and firm, in parts forming tubercles; the lips, ears, and nose do not escape, and that of the brow loses its hair and hangs over the eyes, giving rise to a constant scowling look. The tubercles vary in size, and when situated on the extremities are very prone to ulcerate; these ulcers constantly secrete a thick whitish fluid; they are indolent in character, and eat deeply into the surrounding tissues; their edges are prominent, irregular, and hard; they usually continue as open running sores for many years, and if healed break out elsewhere. Ulcers likewise attack the soles of the feet, fingers, and toes, and these drop off as frequently as in the anæsthetic variety. The mucous membrane of the nose, fauces, &c., suffers severely in some cases; the nose from exfoliation of the bones becoming depressed and more distorted than ever; the voice is generally husky, and sometimes nearly lost. Bullœ appear to occur in both varieties, more generally in the anæsthetic, and seem to indicate a very cachectic condition.

Burdwan.—The leucopathic form of leprosy in this district is thus described :—In the second form (lepra albida), there is merely absence of colouring matter, varying from specks the size of shot to that of large patches, which spots, on being pinched or pricked, are found void of sensation, which generally extends a little way around their margins. The face mostly partakes of the characteristics above mentioned, with partial or entire loss of eyebrows. The patches are mostly confined to the forehead, calves, ankles, feet, hands, and occasionally to the glans penis alone; are dry and mostly devoid of hair; if any exists it is thin, scattered, and ultimately disappears. Previous to loss of colour there is considerable itching experienced in the part, with a dull feeling and dryness. The patches about the hands may or may not ulcerate, and I have seen death from diarrhœa at the age of sixty or sixty-five, when there was no ulceration in any part of the body; the lungs containing tubercle in a hard and softened state, with unusual ashy paleness and knottiness of the liver.

Furreedpoor.—Leprosy is not unknown in this district, although it may not be so common here as perhaps in some of the neighbouring or other districts in Bengal or elsewhere in India. Dr. Rose thus defines this protean disease :—After a preliminary stage or state of more or less protracted general malaise, with especial prominence as regards the functions of the skin and nervous centres, some discolouration or eruption of the surface followed, accompanied, or even sometimes preceded, by progressive dysæsthesia or anæsthesia, or both combined, and subsequently by more evident disorganization of the same structure (skin), finally tending to or terminating in destruction of the distal ends of the body and certain parts of the face.

With respect to the symptoms indicative of and dependent on a disturbed state of the nervous system, "which is always more or less involved in the disease," Dr. Rose observes :—These symptoms are partly referable to the central organs or the system generally, or localized in their periphery. Of the first class, a sense of occasional undefined languor and lassitude, without any appreciable cause, is not uncommon, with a general indisposition to labour, and undue sleepiness; fatigue induced by slight exertions, and an inward feeling of heat or chilliness are also noticed. I need scarcely observe that persons with a strong predisposition to leprosy, and now and then when in the first stage of it, are generally acutely sensitive, with a corresponding mobility of the muscular fibre, both of volition and of reflex action, and that their psychical manifestations are sometimes wound up to the highest pitch, alternating with those of a depressing character, so as occasionally amounting almost to a species of hypochondriasis. As a general rule, these people are more miserable and spiritless than hopeful or lively. General itchiness, pricking, and a sort of universal muscular vibration or shaking, are occasionally noticed in a few instances. Many of these symptoms which precede the disease may continue and become confirmed during its after progress.

Of the symptoms more referable to the peripheral portions of the nervous system, the following enumeration may be sufficient :—They relate both to sensation and motion, which are at first apparently exaggerated, but then gradually lowered, till at last, in the course of the structural changes that supervene, they may be entirely annihilated, specially the capacity for sensation or peripheral consciousness.

Morbid hyperæsthesia is indicated either by an abnormal susceptibility to physical impressions, as those of heat, light, electricity, touch, &c., vulgarly known as being extremely irritable and nervous, or by diseased perceptions independently of the operation of physical agencies, such as burning of the hands and feet, a sense of external warmth or heat, hot bodies passing over the surface, pricking and itching, shooting, darting, cutting, and as if scintillating pains, formication, gnawing and dull aching of the muscles of the extremities, and of the brachial and sacral plexures of nerves, &c. Sometimes the plantar surface becomes so tender and sore that the miserable sufferer can hardly put his feet on the ground, and not unfrequently blisters are excited by attempting to walk while in this state.

Hyperæsthesia applied to mobility is seen in the occasional tremors and vibrations of the muscles of locomotion, sudden startings of the body, and twitches observed in the face and elsewhere, and tonic spasm of the flexures and lateral muscles of the fingers and toes, which become sometimes so rigidly twisted and bent forward as to require considerable force to again pull them straight. In a majority of cases there is a tendency to a slow and permanent contraction of the digital muscles, with progressive wasting from inaction, commencing at the small toes or fingers, and gradually extending to their fellows outwardly, and thus giving rise, as the disease

advances, to that frightful distortion of the hands and feet so painfully characteristic of this repulsive malady. Besides being shortened and hooked forward, the fingers and toes may permanently be twisted outwards or inwards, or just one or two of them may be so contorted, and then, if adjoining, they might cross each other, one finger or toe being drawn over its fellow next to it.

The peripheral nerves, however, suffer more frequently from an impaired state or lowering of their activity, as exemplified in the feelings of heaviness and weight, of cold or chilliness, of tingling, pins and needles, numbness, succeeded step by step, generally, by complete anæsthesia. These symptoms at first show themselves in the extremities over the distribution of the superficial nerves at either their inner or outer aspects, whence they creep on and all round, until the whole extremity is perhaps enveloped as it were in the paralytic affection. The anæsthesia afterwards encroaches upon the trunk, and will thus become general. Generally speaking, at the commencement, the loss of cutaneous sensibility is confined to a few circumscribed spots where the patches of eruption may present themselves, as on the elbows, upper part of the ulna and shins, back of the hands and feet, fingers and toes, sometimes the front and back of the trunk, &c. Not unfrequently the anæsthesia, before it has settled down into a permanency, is only of a transitory character, coming and going off at uncertain intervals.

Dr. Rose describes the most common different kinds of cutaneous eruption occurring in leprosy, as the papular, the tubercular, the bullar, and the squamous:—

1. The papular form consists of an eruption of small circular, elevated flattened points, or of even larger papulæ, sometimes reddish, distinct or closely clustered together, seated on an erythematous base of various shapes and sizes, generally slightly raised at the borders and depressed in the centre. These patches appear chiefly on the forehead, face, anterior part of the trunk, back, and on the outer aspects of the limbs. Their evolution is at first attended with much tingling, pricking, and a hot burning pain; these, however, soon subside, followed by anæsthesia, while the eruption gradually degenerates into a thick continuous squamous formation, in which the whole body is often more or less incased. Sometimes, as the disease advances, and in particular situations, as the face, forehead, nose, and ears, the papulæ will grow larger, more closely set and irregularly prominent, giving that swelled mammilated appearance to the features so remarkable in certain cases of this variety of leprosy, and which is not unfrequently mistaken for its more formidable congener, viz., the genuine tubercular malady.

Various vesicular and pustular eruptions, as herpes, eczema, strophulus, and porrigo, are frequently present at the same time.

2. The tubercular eruption consists of various sized and irregular shaped tubercles on the surface, sessile or somewhat pedunculated, scattered or crowded together, generally smooth, shining, soft, and insensible, and are either livid, dark brown, or fawn-coloured; they are usually preceded by reddish insensible patches, and occur most frequently on the face, nose, ears, lips, eyebrows, and chin, causing, with the thickened rugose state of the intervening skin, that frightful distortion of the features so remarkable in this form of leprosy.

3. The bullar or pemphigoid form is characterized by the eruption of some bullæ resembling pemphigus, generally coming on without any warning or knowledge of the patient, but, if occurring during the earlier stages, it may be preceded by some tingling and pruritus. They seldom appear more than few at a time, and are chiefly confined to the extremities, especially below the ankle and wrist joints. Their mode of termination is either by drying up and scabbing, or by ulceration and cicatrization. Sometimes the ulcers thus produced become gradually deeper, with a constant thin ichorous discharge, and never heal up until considerable portions of the feet or hands have been destroyed. The accidental erosions and burns to which the deadened limbs of lepers are liable cannot be confounded with this genuine eruption.

4. The squamous form is the most frequent and universal in leprosy in tropical latitudes, and, from our knowledge of the disease in India, we might say that a full three fourths of the cases ordinarily met with in this country are of this description. Three principal varieties of this eruption may be distinguished; viz., in one, the patches are of a circular shape, the same as in psoriasis circinata; in the second, they are irregular, and cover large surfaces, as in psoriasis diffusa; and lastly, in the third, they occur in bands or lines most curiously twisted as in psoriasis gyrata.

In the first form the scaly patches are circular, varying in size from that of a shilling to a dollar, more or less rough, and raised at the circumference, but smoother and depressed in the centre, and appearing at first a few and scattered on the limbs, afterwards more numerous on the back and rest of the trunk. In some cases the circles after a time may break up, and disappear, followed by the diffuse form, and in others these two varieties may be variously intermingled; sometimes the patches will go on increasing till large surfaces may be affected. The accompanying anæsthesia is either limited to the eruption, or may extend to other parts, even at a considerable distance from it. The eruption is originally papulæ in character, the papulæ being somewhat flattened and each covered with a scale, which is successively renewed.

Chittagong.—Leprosy is very common in this district, much more than in any other part of India in which I have been.

As far as my observation has gone, there are two distinct varieties or manifestations of the disease in India, differing in their external characters, in their severity, and in their frequency.

a. Lepra tuberculosa.—It first appears in a discoloration of the skin, which becomes of a dark-reddish or crimson shining colour This is generally attended by pain. A hard point usually forms at one part, raising the cuticle, which soon ulcerates; a thin sanious discharge is thrown out, which hardens on the surface, and forms a crust, from beneath which the purulent discharge continues to flow; the surrounding skin has its sensibility diminished.

In some respects it is like the tubercular form of syphilis. The distinguishing characters are, that in the former the tubercles are soft, tawny, and attended by anæsthesia of the surrounding skin; while in the latter they are hard, dark red, and their appearance can be generally traced to some antecedent venereal ulcer.

b. Lepra anæsthetica.—This is far more common than the first: it is so frequent among the inhabitants of the Chittagong District that it is scarcely possible to pass along any frequented road without meeting some one affected by the disease. It commences, I am told, generally by a burning sensation of the part; occasionally no uneasiness is felt. Portions of the skin are suddenly affected with loss of sensibility, and the dark colour of the skin is altered; the pigment appears to be gradually absorbed; in some entirely, in others only partially; the colour of the skin varies from a dusky olive to an almost pure white. These patches generally lose their hairs, are free from perspiration, and of a lower temperature than the surrounding surface; their shape is sometimes very irregular, at other times circular; in size they vary from the size of a rupee to that embracing the whole limb.

Mozufferpore (*Tirhoot*).—Leprosy prevails more or less in every town and village in Tirhoot. Mr. Macnamara, who has treated not less than 2,500 of the poor affected with leprosy at the dispensary under his charge during the last five years, describes three forms of the disease, the leucopathic, the anæsthetic, and the tubercular.

In the first form, although the change in the colour of the affected parts appears to be simply due to an absence of pigment in the skin, (which, together with the hair upon it, becomes perfectly white, but continues to perform its functions as in health,) there is reason to believe that it is allied to leprosy. The following is one among many cases of leucopathia which makes Mr. Macnamara think so. "A rich zemindar applied to me about a year ago suffering from this form of the disease, his arms and face being perfectly white. He was the eldest son of his father, who had died from the second or ulcerative form of the disease. My patient's only sister was affected like himself, and his brother in a similar way to his father. His only son, a lad of fifteen years of age, is now under my treatment for the third or tubercular form of the disease. This son was born prior to the leprosy having manifested itself in the case of the father, since which he has ceased to cohabit with his wife, and, as far as I can ascertain, she has no symptom of the disease."

In the advanced stage of the anæsthetic form, vesicles appear usually on the hands and feet first; the blister bursts, and leaves an unhealthy painless ulcer, which gradually extends and eats down to the bone; a slow form of mortification comes on, and joint after joint of the hands and feet are destroyed; the nose and lobes of the ears drop off; the patient suffers little or no pain, and the progress of the complaint is often fearfully slow; he becomes the most repulsive object on the face of the earth, and gradually subsides into rottenness and dust, for a considerable part of the body has died and been cast off long prior to the unfortunate man's dissolution. A fate not uncommon for these poor creatures is to be eaten alive by the jackalls when they are no longer able

to defend themselves, and the worse they become the more they are shunned by their own countrymen; and there being no hospital or asylum for them to go to, their fate is frequently such as is above described, or else they take poison and kill themselves in this way.

In the tubercular form, the disease usually runs its course with far greater rapidity than the last described form, and is frequently attended with great pain. The patient at the commencement of his illness notices a shining oily appearance of the skin; but at this stage, in place of the part having lost its powers of sensation, it is very painful to the touch, and becomes swollen from the deposit of leproid matter, small tumours then form, usually about the face, nipples, arms, and legs; they gradually increase in size, and are often tenably painful; ulceration comes on. The termination of the disease is much the same as in the second form, but is usually far more rapid, a diathesis similar to that of cancer being established; in fact the tumours are not at all unlike a series of small cancers spread all over the surface of the body. This form of the disease often follows syphilis; and had it not been distinctly and clearly described long before syphilis was ever heard of in India, I might have been inclined to consider it as a form of leprosy dependent on a syphilitic taint in the system.

Dorundah.—Dr. Govan describes the different forms of cutaneous eruption which he has witnessed in cases of leprosy; the whole symptoms and progress of the disease, commencing as it does with symptoms of prickling, burning, and numbness, &c., and terminating in ulcerative absorption and atrophy, lead one to look upon the nerves, if not the original source, at least to be among the parts primarily affected.

Form A.—Called by the natives soonbaharee.

Commences with a thickening of the integument of the fingers or toes; sometimes, missing over one or two fingers or toes, it will attack the next; it then spreads up the hands or feet; it will now stop, and appear at a point higher up; the thickening of the integument now appears in different parts of the body in patches of an irregularly circular form, having something the shape of ringworm. In the interior of each patch of thickened integument there are reddish eruptions, which are concealed by thickened epithelium, but can be brought into view by rubbing this off; the eruption consists of pimples containing a serous fluid; these patches are devoid of sensation; they frequently unite into large circular masses.

Form B.—Called by the natives bohuq.

The integument of heels or palms of the hands begin to thicken and crack, displaying the red flesh underneath; this will heal up; afterwards the point of the nose, ears, malar protuberances, &c., become thickened and flabby; after a time peculiar markings appear on the surface of the body, which I can only describe as being exceedingly like the markings out of different countries as seen on a map, and the colour of the spaces thus marked out are of an orange or dark mahogany colour; the orange-coloured patches are exceedingly insensible to the touch or prick of a pin, as compared with the surrounding skin; these patches are in no way elevated above the surrounding integument.

Form C.—Qooba mucshur.

One case of the following description I have seen:—There are over the surface of the body irregular patches of elevated and thickened cuticle; upon these there was strong black hair growing: these patches were deadened and insensible.

Form D.—Called by the natives jozam or burs.

The disease commences by rose coloured patches appearing on the tips of the fingers, toes, lips; these spread, and meet others, which break out on other parts of the body, until more or less of the whole body, sometimes the whole body, becomes of a rose colour; the cuticle is always in a scurfy state and falling off in scales; the hair also becomes white. Sometimes the subject of this disease is born of the peculiar colour above mentioned.

Patna.—Leprosy is well known in this district, and has been familiar to the people of this part of India for ages: their writers on medicine enumerate 18 or 20 forms of the disease as prevalent, but it is obvious that these are mere varieties of the same morbid state.

Dr. Sutherland considers that the development of the disease is always preceded by a cachectic condition, which he calls a leprous taint, or diathesis.

The characters of this taint are as follows:—A rough, harsh, and scurfy condition of the skin, chiefly of the hands and feet; it is rigid, wrinkled, dry, and harsh, and a hard pointed substance drawn over it will leave a white line, like a pencil drawn over a

slate; the heels are horny, cracked, and fissured, and the soles of the feet are thickened and fissured, but in a less degree; the toe nails are uneven, tubercular, much thickened, or almost wanting, their ends being thin, uneven, or ragged. Persons affected to the above extent may remain in that state for years, the diseased condition not extending; but if subjected to privations, such as bad food, or food in insufficient quantity, defective clothing, impure air, laborious and exhausting occupation while the person is badly nourished, leprosy of the anæsthetic form will frequently be the result.

That this leprous taint is extremely prevalent among the rural population of the district appears from the following facts:—

Within the last six months I have had to examine 2,348 men, intended for the new police of the city and district of Patna. These men appear before me in a state of nudity, with the exception of a cloth about the loins; traces of leprosy are thus easily observed. The average age of the men examined was 23 years. I found a leprous taint or diathesis to exist in one out of every ten, and this proportion was rejected as unfit for service.

When serving with the native army I found repeatedly that men who had in early life the characters which I regard as a proof of the existence of a leprous taint, and which I have already described, frequently had to be invalided in after years for leprosy.

Among 348 male prisoners (Hindoos 292, and Mussulmans 56) in the Patna jail, 17 Hindoos and 2 Mussulmans were affected with leprosy.

Midnapore.—Mr. Kendall describes, besides the tubercular and anæsthetic forms of the disease, another form, the morphæa alba lardacea (the dhobul khoosto of the natives), which is distinguished by the appearing of white marble-like glossy spots, either deficient in or entirely devoid of sensation; the patches are on a level with the surrounding skin, and feel hard and dense to the touch; the patches are generally devoid of hairs, or the hairs, when present, are white, very small, and weak.

Serajgunge.—Sub-Assistant Surgeon Jadub Chunder Deb observes that leprosy is known in this and in every district of India. "I do not know any place in India where leprous people are not found or seen."

The forms of leprosy in the district of Serajgunge are,—

1*st.* There is one variety of leprosy called by the natives dhobul or setterong (means white), which is a white affection of the skin. This differs from other varieties in not having scales, but consists of smooth shining circular patches, in which hair grows white and silky, with acute sensibility. This is incurable; it commonly commences on the palm of the hand, sole of the foot, lips, and then it extends all over the body. The natives of this country fear to touch these people, and neither dine with them for fear lest they get such disease.

2*nd.* There is another variety of leprosy, called by the natives moharoug or koot, and also called nalsy and jojam by the Hindostanee hakeems. This sort of leprosy is almost always fatal; it commonly commences on the face, nose, and ear by red patches; the skin of the face, nose, and ear become red and thick, with elevated edge and little or no sensibility; then it extends over the extremities; the skin of the palm of the hand, sole of the foot, fingers, and toes are thickened, inflamed, and covered with thick scales and crusts, which ultimately ulcerate and discharge offensive matter. In some of the worst cases the fingers and toes are sloughed off.

3*rd.* There is another variety of leprosy in this district; it commences generally with dusky red patches with elevated edges, and covered with thick crusts or scales. When removed the skin appears red and shining, with little or no sensibility.

b. In my opinion these several forms are only varieties of one common morbid state, and they are not distinct diseases having affinity with each other.

Chumparun.—Dr. Coates thus describes the advanced stage of the disease, when the bones become affected, and which is known to the natives by the name of korhi:—Its real commencement is in the periosteum, surrounding the shafts of the phalanges of fingers and toes. The periosteum becomes detached from the bone, and while doing so the tissues between it and the skin become infiltrated with exuded lymph, at first soft but ultimately hard and firm; and if more is thrown out at one side of the finger than at the other (according as the periosteum is affected at one part in preference to another), on the lymph hardening the finger is bent to the opposite side from the joint next to it, and firmly fixed in the new position. All this occurs without pain, and thus

ends that attack for that time. Next time the serum that is exuded between the periosteum and the bone, together with the surface of the bone which has exfoliated, find their way to the surface; the skin over the part being thick becomes elevated into a sort of bulla, which at last bursts, and an abscess is formed. The pus is of an extremely pale colour, and is accompanied by much serum, thin and clear; it has a peculiar and indescribable odour. The centre of the ulcer is of a pale glossy colour, and the edges bright red. From this red colour of the edges this stage of the disease is often called rakta kor. Attack after attack of this nature exactly succeed each other, and bone after bone becomes engaged; the ends soften and the shafts exfoliate; and while in this condition, if the sufferer knocks accidentally his finger or toe against any obstacle, the part breaks off. Some blood and grainy serum come away, and then the part dries up, leaving a thick scab over it until perfectly healed. In this manner joint after joint is lost. But if the affected finger is not broken off, the finger shortens at each attack from the entire shafts exfoliating, and the ends becoming absorbed until the finger or toenail, or what may remain of it, is found as far back as the base of the second phalanx. Before the process has proceeded thus far, the tendons often take on that softening and suppuration, which proceeds along up their palm and sole up to forearm and leg as far as their muscular origin, and this suppuration then extends to the intermuscular cellular tissue, and diffuse suppuration among the muscles of the forearm and leg is the result. By this time the radius, ulna and tibia and fibula become engaged; softening of the ends and exfoliation of the shafts go on, but only for a very short time; for this extensive suppuration has so far exhausted the unhappy sufferer that death from exhaustion rapidly supervenes, hectic accompanying of course.

(*a.*) *Interrogatory II.*

Calcutta.—From the age of 20 to 30.

Pooree.—The disease generally begins to manifest itself between the ages of 4 to 26, as may be seen from the list of cases given in the accompanying table. I have never seen it in a child younger than five years of age, although the parents were affected with it.

Beerbhoom.—The disease generally appears between the ages of 18 and 30, or about the period of puberty; seldom before.

Malda.—Between 18 and 30; and in one or two instances it has shown from 10 to 12.

Cuttack.—The disease occasionally manifests itself in children as early as the fifth year, but the more common time appears to be between 20 and 30.

Chittagong.—The tubercular form of leprosy appears at any time of life. In one case that I know it first showed itself about 25 years of age. The anæsthetic manifests itself also at all ages; young boys of 12 and 14 are often affected. As a rule, however, it begins about middle life. One of the largest zemindars in this district is a leper. It began with him about his fortieth year. An intelligent baboo, who has this form of the disease, tells me that he is 57 years of age, and that up to his forty-eighth year he was quite free from it; that it first made its appearance on the lower lip and on the soles of his feet; that eight months afterwards it showed itself in the axilla; since then it has ceased to spread, although he has done nothing for the cure of his complaint.

A "dhobie" tells me that up to his twenty-ninth year he was not afflicted with any affection of the skin; now his hands and feet are covered with anæsthetic patches.

Mozufferpore.—As a general rule, I do not think any of the forms of leprosy manifest themselves before the age of puberty.

Huzareebaugh.—Leprosy is not frequently apparent as a disease of childhood, seldom making itself manifest before the age of 20.

Arrah.—The disease generally, I believe, manifests itself with or after puberty, *i.e.*, from 12 to 15; but I have known of cases occurring in childhood.

Midnapore.—Leprosy prevails at all ages, from infancy to extreme old age; but it appears to be much more common after than before the period of puberty.

Serajgunge.—The disease manifests itself in all ages of life.

Chumparun.—The following are the only statistics I have been able to collect since making minute enquiries on this subject:—

Out of 180 lepers between the ages of	10	and	20	it began in	21	patients.
,,	,,		20	,,	30	,,	67	,,
,,	,,		30	,,	40	,,	67	,,
,,	,,		40	,,	50	,,	24	,,
,,	,,		50	,,	60	,,	1	,,

(*b*)

Bancoorah.—Leprosy, which prevails to a great extent in this district, begins by various signs.

a. 1st, of sensation.—Long before any visible signs, the individuals about to be the victims of leprosy feel, in some cases, a peculiar kind of creeping as if of ants crawling about the member or part to be affected; others lose sensation; while others again feel a burning or smarting pain, like that after the sting of a wasp.

2nd, Visible signs.—In some cases the members to be affected with leprosy, such as the ears, nose, lips, fingers, &c., become hypertrophied, and the voice becomes thick and hoarse; in other cases the first visible sign is that patches of circular ulceration manifest themselves like ringworm in appearance; while in other cases a peculiar kind of absorption of the pigment takes place, leaving the cuticle quite fair.

Moorshedabad.—The disease, which is common in the districts of Moorshedabad, generally commences with a sensation of heat or burning of the skin, which is shortly followed by the eruption of small, smooth, and prominent spots (papulæ and tubercles) of a dark red colour arranged in a circular manner, and more or less elevated above the surrounding healthy skin; these patches gradually extend, and are sometimes covered with dry, white scales. The usual seats of the disease are the fingers and toes, ankle, knee, and elbow joints; the back and shoulders are also frequently affected. Diminished sensibility of the part attacked is an invariable symptom. As the disease progresses, small circular ulcers form, which discharge a sanious fluid; these are always difficult to heal, and when they occur on the feet or hands generally go on eating away the phalanges, or, in more aggravated cases, the whole hands or feet.

Pooree.—The earliest symptoms usually observable are the local discolorations of the skin, either about the face or extremities, occurring in the form of slightly raised patches, with loss of sensibility, or sometimes, when it begins in the tubercular form, an hypertrophy of the skin of a dark color, covering the alæ of the nose, lobes of the ears and face, first shows itself, conjoined to an unhealthy or diseased appearance.

Beerbhoom.—The earliest symptoms observable are circumscribed, isolated, pink or purplish colored scaly spots of a circular or ovoid form, attended generally with a sensation of numbness; partial or total loss of cutaneous sensibility; dryness and itching of the skin, often accompanied with sensations of formication, pricking or tingling over the entire surface, but particularly of the extremities, and often of burning in the palms of the hands, soles of the feet; change of color of the skin to a darker or lighter hue, and in most cases there exists a peculiar white shining appearance of the tip of the nose, lobes of the ears, &c.; general malaise and relaxation of the system.

Sumbulpoor.—In some cases the earliest symptom is discoloration of the skin, in others anæsthesia, in some both, and again in others the skin becomes dry and scurfy. Others have stated that the first symptoms are boil-like swellings, discharging an ichorous fluid; splitting or cracking of the tongue is also considered an early and sure sign of leprosy; and I must say that, of the many cases I have examined, comparatively few in whom the disease has been at all well marked have been free from this symptom.

Monghyr (*Behar.*)—The youngest leprotic patient I ever saw was the Mussulman boy, Tohoorie (Case VI.), twelve years of age; in him the disease is said to have begun twelve months ago. It commenced with local anæsthesia in two patches on the right thigh and hip; they are now the size of a hen's egg. On examining him, I found discolouration and dryness of skin, not only on the seat first affected by the disease, but also on the back of the left hand; the fingers and toes being swollen and the skin discolored already; I expect ulcerations to take place soon on those localities.

The earliest symptoms I go by in suspecting leprosy, which the sufferer tries to conceal as long as he can, is a slight but even (not tubercular) hypertrophy of the

toes, a peculiar shining appearance of the integument over them, unevenness of the nails, and fissures on the soles.

Midnapore.—In lepra tuberculosa the earliest symptoms are raised patches, having a coarse tubercular appearance, not unlike that presented by a thick-skinned orange, and affecting primarily the nose, face, ears, and eyebrows; the patches are usually more or less roundish in form, but this is more apparent when the spots are situated on the trunk or extremities, and is less marked when situated on the face; the size of the spots varies much, say from half or three quarters of an inch in diameter to several inches, involving occasionally the whole of the face, forehead, and ears; on their first appearance these spots have generally an erythematous or purplish hue, which afterwards gradually disappears.

The patches are generally attended with increased sensibility, the patient complaining of a slight tingling or pricking sensation.

In lepra anæsthetica the earliest symptoms are the occurrence of patches devoid of sensation, and usually appearing first on the extremities; these patches are distinguished by a partial bleaching of the skin, and a furfuraceous appearance caused by desquamation of the cuticle; the patches increase in size, and the loss of sensibility gradually extends until it reaches the trunk, and in severe cases I have seen only a small portion of the trunk retaining its sensibility, and that only imperfectly.

Rungpore.—The first symptom is almost invariably partial loss of sensation in some part of one or both of the lower extremities; in most cases that have come under my observation, this has first occurred in the right hip, soon extending to the foot, accompanied sometimes with formication or tingling on the skin; these symptoms gradually increase, the hands and arms being next affected; at this stage the fingers often become contracted or bent over at the last joint. The health is otherwise generally good. Ulcers often break out on the toes, which in many cases are entirely eaten away. These sores may extend over the whole body, leaving when healed a white scar.

Chumparun.—In the anæsthetic form, the first and most constantly noticed symptom is that of tingling running along the nerve from the affected part up the extremity, increased by touching, striking, or pinching any part of the skin over the course of the nerve. I have often observed this myself in a nerve which is just becoming the seat of leprosy; tapping it anywhere along its course makes the whole tingle; but the advanced cases have no such symptom, as soon as anæsthesia is established this hyperæsthesia of the nerve entirely subsides. It is frequently overlooked by the patients themselves, who, not dreaming of becoming subjects of such a disease, take little or no notice of this symptom at the time. At the commencement of the subsequent attacks in other extremeties it is frequently present, and it was in them I first noticed it.

The second symptom is the gradual loss of sensation in the patch of skin affected. While this is in progress, if any part of the diseased patch be pricked or pinched it is felt not so much in the spot touched as in the whole patch.

Serajgunge.—In many cases the disease commences with an intense burning sensation all over the body or particular parts of it; for instance, one arm, one leg, the face or back. This burning sensation is so distressing, particularly during the hot months of March, April, and May, that nothing but blood-letting relieves the patient, as, when I was at Bareilly, numbers of leprous people used to come to me to be bled. This burning sensation remains sometimes two or three years, and then the disease sets in with small, round, reddish, and shining elevations of the skin, at first smooth, but within a short time exhibiting thin white scales on their tops.

Interrogatory III.

Moorshedabad.—The middle period of life. Aggravated cases are seldom seen in young people, and I do not think that the disease itself causes much mortality, most lepers dying from diseases the result of want and exposure, such as diarrhœa, cholera, dysentery, or phthisis.

Pooree.—The period at which the disease usually proves fatal is subject to much diversity, and depends much on the form of it, and the habits, constitutional peculiaritites, and the means of good or bad living enjoyed by the individual. A great deal, in my opinion, depends on these two last circumstances; poor paupers and half

nourished individuals seeming to die much earlier than persons in little better positions of life, and who are thus able to indulge in more nutritious and wholesome articles of diet, though of course this does not always hold good.

Balasore.—The disease attains its full development at the age of 35 to 45, and within 5 to 10 years after its appearance. It generally proves fatal at the age of 40 to 50.

Furreedpoor.—The disease appears generally to attain its full majority during early manhood or about the age of from 30 to 40, and the time usually required for this purpose would seem to range from five to fifteen years. But these things evidently depend very much upon the form of the disease which it assumes in particular cases; for instance, the sthenic varieties, such as the tubercular, mammilated, and rash forms, as a general rule, commence early, and arrive at the height of their development quickly; on the other hand, those of an asthenic character, as the chromatogenous and purely scaly kinds, not only appear late, but maturate at a comparatively more advanced period of life. Death generally takes place between the tenth and twentieth year of the attack, and the thirtieth and fiftieth of the age of the patient. Exceptions of course occur to both the above rules; I have seen a child affected with tubercular leprosy at the early age of 8 years.

Tipperah.—The disease seems to attain its full development between the ages of 30 and 45; and judging from the cases I have examined, a fatal termination would take place about the age of 50 years.

Patna.—The disease does not usually attain its full development before the age of 40, and does not, unless complicated with other morbid conditions, prove fatal before the age of 50.

Midnapore.—The period of life at which the disease usually attains its full development depends on the period of life at which the attack first commences; and this appears to be most usual between the ages of 20 and 40 years.

The tubercular form seldom proves fatal before the third year, and, as a rule, not till the seventh or eighth; the average duration would probably be about ten or eleven years.

The anæsthetic form runs a much slower course, and I have very recently seen several patients who have been suffering from it for from twenty to thirty years; one case exceeding the latter period.

Rungpore.—I think the disease can hardly be said to obtain its full development within any particular time; sometimes it never gets beyond a certain point. A man may live leprous for many years, the only symptoms being partial loss of sensation in the extremities or bending of the fingers.

Interrogatory IV.

Calcutta.—Out of 58 lepers examined by me, 44 were males, 14 females.

Bancoorah.—It is more frequent in the female than the male; about two thirds of the lepers are of the female sex.

Moorshedabad.—I think it is equally common in both sexes.

Pooree.—It is more frequent in the male sex than in the female in this district, and in the following proportion of 5·25 males to 1 female.—*Vide* Table of Cases. The preponderance of the affected males over the females in this district may be owing, in some measure, to the circumstances that the greater portion of them are pilgrims who have come from other parts of India, of whom males form the majority.

Raneegunge.—I do not think so, as, although we see more males affected: this I consider owing to the females being kept more at home, and seldom, if ever, coming for treatment.

Beerbhoom.—The disease is much more prevalent in the male sex.

In what proportion I cannot say, from my own knowledge; but by intelligent natives I have been informed that the proportion is about five to two. I have not often seen the disease in the female sex, and their greater immunity from it may be owing to their being less exposed to the vicissitudes of the weather, and less dissolute in their habits.

Sumbulpoor.—I do not think the disease is more common in one sex than the other, but I have no data enabling me to give a positive opinion.

Cuttack.—The disease is undoubtedly more common in the male than female sex, but in what proportion I cannot say. It would be a very difficult thing to ascertain this point with any certainty, as the women are so excluded from the public eye.

Mozufferpore.—The disease is equally prevalent in both sexes.

Arrah.—Leprosy is eminently a disease of the male sex; in my opinion at least 95 per cent. of those attacked are males.

Bhaugulpore.—The disease is not, as far as my experience goes, and from the inquiries that I have made, more frequent in one sex than another.

Monghyr.—I have no reason to suppose that sex makes any difference in the frequency of the disease. The absence of all exact statistical data regarding the population of this country, and the seclusion of the female sex, make any opinion on the subject a mere guess.

Interrogatory V.

Calcutta.—It is confined almost entirely to the purely black population.

Raneegunge.—Decidedly more common amongst the native races of India, Burmah, and China than amongst the temporary residents, even making every allowance for their relative proportions; it is not rare among half breeds, especially the mildest variety; but I have been repeatedly asked to prescribe for leprosy, among this class, which was decidedly secondary syphilitic symptoms.

Sumbulpoor.—There are only a few Europeans, all officials, resident in Sumbulpoor, and none of these are affected; as regards the natives, all castes and classes seem to be equally affected, with this exception, that I do not remember to have seen a man of the syce caste suffering from leprosy; this is a very low caste in Sumbulpoor.

Furreedpoor.—Certainly the colored or the indigenous population is the most liable to the disease. I cannot state what is the ordinary relative proportion between the affected of those two classes of inhabitants, viz., the native and foreign, in any part of India. Mahomedans appear to be more obnoxious than the Hindoos.

Chittagong.—I have never seen or heard of a case of leprosy in a pure European.

At Chittagong there are about 850 Roman Catholics of Portuguese descent who have become almost natives in their colour and habits. The natives distinguish them from pure Europeans by the opprobrious term "Feringhees." Their ancestors were the old Portuguese colonists of India. These married with natives, and a race of half castes was the offspring. I cannot discover whether any new immigration has taken place since Chittagong came under British rule, but from the effeminacy and smallness of stature of the present race I should imagine that breeding in and in has caused them to degenerate. Now a days they never marry with natives, and only occasionally is fresh blood introduced from some Portuguese colony. Their habits approximate very much to those of the Hindoos and Mussulmans; they live in the same badly ventilated thatched houses, surrounded by the same jungle and in the same bazaars. They, however, dress more in the European fashion; but their food is, with few exceptions, similar to that of the natives. They eat beef, generally young and very lean. Very fat pork, improperly fed, is their favourite animal food. They use a considerable quantity of country spirits of very inferior quality. Mr. J. E. Bruce, Salt Agent at Chittagong, informs me, that during his residence of 29 years here he has only known two severe cases, and one slight one among these people. Monsieur Fonimond, their priest, says that leprosy is a very rare disease among them. In addition to the 850 above mentioned, there are about 50 native Christians who have no Portuguese blood. Leprosy is quite as rare among them as among the Feringhees; their habits and mode of living are similar. Leprosy is, therefore, much more common among the black population than in either of the others.

Mozufferpoor.—The Hindoos, Mussulmans, half-caste, and native Christians are all, as far as my experience goes, equally effected with this disease. I have never met with a case of the kind in a British-born subject.

Arrah.—Leprosy is entirely confined, I think, to the native population, and is unknown among the Eurasians and Europeans.

Dorundah.—I have seen an apparently greater proportion of cases among the Assamese than among the population of this district. I have never seen an instance of the disease among the European population, but it occurs among the Eurasian or half-caste population.

Patna.—The disease is extremely rare among Europeans in this country; it is more prevalent among Hindoos than Mussulmans; the latter, as a general rule, live better and adopt a more varied diet than the former.

Interrogatory VI.

Calcutta.—In the very lowest. Poverty, filth, and very frequently complication with syphilis, I think, seem to favour its development.

Bancoorah.—*a.* The disease, as far as my experience goes, is more rife in towns or large villages, where the population is great, than in small rural villages, or in parts of the district thinly populated. The larger villages or towns in the district (where leprosy prevails) are generally situated on high ground, but surrounded with rice-fields, which are flooded during certain seasons of the year, and of course must evolve malarial exhalations. The supply of water, both for drinking and ablution, is obtained generally from "tanks" or reservoirs, which in some seasons of the year become overgrown with a species of vegetation, which, from observation and experiment, I can assert to be a fertile source of scabies.

b. The dwellings of the class in which leprosy prevails are small mat huts, about 10 feet high, and consisting of one room, generally not so large as 10 feet square, in which a whole family live, cook, eat, and sleep, with no furniture, and with little or no covering of clothes; the houses are generally dirty, and the surrounding neighbourhood is as much so from the accumulation of garbage.

c. They are extremely dirty in their habits, seldom or never bathe, and certainly never change or wash the little clothing they wear to conceal their nakedness, but simply allow it to rot and fall off.

Pooree.—It is chiefly confined to the poorer people, and to those who are either pilgrims, having come from other and remote parts of India, bringing the disease with them, or to the ill-fed, and those who live in low and squalid habitations, where vice and filth of every description is rife. The rich and well-to-do, also, in some instances, are the subjects of it. A good case in illustration of this occurred a few years ago in that of the late Rajah of Pooree, who died from it at the age of 25, a confirmed leper. The unfortunate victims of it are generally to be seen wandering about the streets and native bazaars, begging for sustenance from door to door, objects alike of pity and disgust from the hideous deformities presented by many of them.

c. The people are generally, with a few exceptions, such as the highest caste Brahmins and those nearly allied to them, dirty and uncleanly, seldom even washing their bodies, and wearing the same clothes till they nearly drop off. This is particularly the case with the poor and labouring classes, who, from poverty and lazy habits bred up from infancy, are the worst. In addition to these habits, they adopt another equally dirty practice, *i.e.*, of anointing the whole of the body with a mixture of turmeric powder and mustard oil, which they do with the idea that it acts as a safeguard against cold and rheumatism.

d. The ordinary diet of the poor people chiefly consists of boiled rice, vegetable curry, or fish, either fresh or dried, with a very few condimentary spices, and a little mustard or castor oil* in place of butter or ghee.

Balasore.—*b.* The dwellings poorly low, and built in a plan with total disregard to cleanliness, ventilation, and light.

c. No care is taken of their persons, clothes scanty, and soiled by dirt and oil which they rub with turmeric; bathing in cesspools, the water of which is impregnated with remains of putrefied vegetables and animals. This also serves for cooking and

* It is a notorious fact that the poor people of this district actually use this oil as food, habit seeming to inure the system to its ill effects.

other purposes, except drinking. Sleeping on the damp floor, with but straw and scanty clothing to protect the body from the injurious effects of damp.

d. The ordinary diet, coarse rice, dried fishes, and vegetables. Way of living, fishing, and exposing to the influence of sun, rain, cold, &c.

Beerbhoom.—b. Sanitary laws or precautions are utterly disregarded by the great mass of the inhabitants; they may be said to revel in filth and foul air, and to luxuriate in the midst of reeking manure heaps, stagnant cesspools, &c., the water of which latter is not unfrequently used for every domestic purpose, whether for personal ablutions, cleansing of filthy rotten rags, often saturated with the emanations from bodies affected with the most loathsome forms of skin disease, syphilis, scrofula, &c., and for cooking purposes; even the calls of nature are frequently complied with on the verge of those foci of contamination, and with the water of the same pool the mouth and breech are indiscriminately laved.

d. The food is of the poorest, often of the most unwholesome and innutritious description, exclusively vegetable, consisting for the most part of the coarsest kind of rice, to which is added, by those who can afford it, a small portion of the poorest and least nutritious pulse and green vegetable, and is often eaten without salt, or if this article is procurable it is always largely mixed with dirt, and I fear often adulterated with something still more prejudicial to health; other condiments, particularly of the warm class, so essential to a rice-eating people, are almost unknown to the poorer classes of the people. Those articles of diet, particularly the pulse, are often damaged from damp or other causes; and to the use of this article in this state inveterate cutaneous eruptions have been ascribed,* even to some kinds of this article in a sound condition, and which from their cheapness are almost exclusively used by the most indigent, similar and even deleterious effects are attributed. The food thus used by the most indigent classes may be said to be of a most unwholesome and innutritious character.

Sumbulpoor.—In the cases above given it will be observed that there are persons of very various castes and occupations, and I may add, that, with the exception above given, I have the notes of others of nearly every caste in existence in the district.

c. The higher classes and inhabitants of towns generally are decidedly clean, as bathing is an institution; the lower classes are however filthy, and the colour of their bodies is quite obscured by dirt and oil rubbed in layer upon layer.

d. The ordinary diet of the people of this district consists of rice, dhâl, wheaten flour, maize flour, meat, ghee or clarified butter, sugar, curds, cheese, and vegetables, and fruits in endless variety, though not of very good quality.

They also almost without exception consume spirit, and many take opium, and not a few hemp.

Cuttack.—The disease is most prevalent in the lowest classes of society, for dirty habits and bad living appear greatly to foment it.

a. Damp places favour the development of the disease; but as regards its greater prevalence in urban or rural districts, I am unable to get statistics.

b. The sanitary state of the dwellings of the poor in Cuttack and its neighbourhood is of the worst kind; they build their houses from mud, which is dug close to them, and the holes thus left become the receptacles of all kinds of filth, and after the rains dry up spread malaria in all directions.

d. As regards the diet of leprous persons, I find they live chiefly on rice, pulses, and vegetables, and occasionally flesh. All agree in saying that the eating of fish increases the disease; and it is only when they have given up all idea of being cured that they become callous, and make it an article of diet.

Furreedpore.—There is nothing remarkable in the ordinary diet, and in the general way of living, of the people of the district which may be suspected to have any peculiar effect either in bringing on or continuing the disease. They are, however, extremely fond of fish, which abound everywhere, and of which they are great eaters; but I do not see that they are on that account the more subject to its inroads than their less piscivorous brethren in the neighbouring districts.

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* Dr. Best of Raneegunge remarks:—Among the poorer classes of this district, the cheap kesaree dâl is much used, and I cannot help remarking that the symptoms of its noxious influence much resemble some of the primary manifestations of leprosy. Thus we have pain and weakness of the knees and ankles, burning of the hands and feet, general feverishness, pain at the pit of the stomach, and, if persevered in, we have scaly eruptions of the skin and pains all over the body.

Chittagong.—The hill districts are much more healthy than the valleys. The tribes inhabiting these parts are remarkably fine races; they are short, thickly-set, muscular, and large-boned; they are variously called Chukmas, Kookies, Mughs, and Tipperahs.

The houses of the Chukmahs are peculiar, and well adapted for the damp, hot, malarious climate in which they live. They are on piles, and are entirely built of wood, being raised about eight or ten feet from the ground. A ladder is the only approach to the chambers, which have generally two doors, and in the dwellings of the better classes one or two windows are found. Between the floor and the ground all the filth and refuse of the household are cast; water accumulates unheeded, and the calls of nature are attended to in the same spot. With such noxious emanations rising from beneath their feet, it is no wonder that smallpox and cholera occasionally commit great ravages. The Chukmas are a cleanly race, as far as daily ablution can make them so; but their clothes are filthy in the extreme, and are generally worn until they fall to pieces. They live tolerably well; their food consists of from half to three quarters of a seer of rice daily; with this, when the expense can be afforded, chicken, goat's flesh, wild boar, deer, and tiger's flesh are added. Fresh fish is eaten when it can be procured, but the most delicate and recherché fare is the half rotten, dirty, dried fish called "sukhti." This is a mess prepared by salting fish, and then drying them in the sun's rays; it is very apt to cause diarrhœa, and to counteract this tendency they use large quantities of chillies and other condiments.

Fevers of a malarial type, at certain seasons of the year, attack almost the whole population; spleen disease, however, is rare; smallpox occasionally visits them; this year it has been severer than usual. Cholera makes its appearance at uncertain intervals. During the present month (April 1863) it is carrying off considerable numbers. Syphilis has not entered their country up to the present time. Gonorrhœa exists. Skin diseases are very common, as might be inferred from finding that they lived on such unwholesome food. The native doctor at Kassalong informs me that scarcely a single adult is to be found who is not subject to some herpetic eruption; it generally attacks the abdomen, loins, and shoulders.

Among the Chukmas leprosy is found in both its forms, but it is unfrequent.

The Mughs, another race, inhabit the district around Chittagong and the villages along the sea coast. This is the most robust tribe in this part of the country. They are short-necked, have prominent cheek bones, and their eyes are small. Their eyebrows are angular. They are chiefly fishermen, cultivators, and weavers. In religion they are Buddhists. To kill any animal is therefore forbidden to them; but any that has died, even of disease, and however putrid it may be, is greedily devoured. They eat everything, and do not look with abhorrence on either lizards or snakes. They also indulge in native spirits. They are a people of strong animal passions, and are very revengeful. Their favorite article of diet is a half-decayed mess of fish, dried in the sun and salted, called "nga pie;" of this, flavoured with condiments, they eat daily enormous quantities. Like the Chukmas, they live in houses raised on piles. In the sub-division of Cox's Bazaar, which is chiefly inhabited by Mughs, fevers, rheumatism, and catarrhs are prevalent. Skin diseases are as prevalent as among the other hill tribes; herpes, scabies, and psoriasis are found among all classes. Leprosy, from what I can learn, is very rare; not nearly so common as it is among the inhabitants around Chittagong.

Tipperah.—The circumstance which I have seen most favorable to the development of the disease is syphilis, aggravated by want and proper treatment. In this district syphilis of a bad form prevails. During my short residence here I have had many cases under treatment, all chancres of a phagedenic kind, invariably followed by secondary syphilis. This can in a measure be accounted for by the fact of the natives tampering with themselves, and using their own remedies before applying for medical aid. In the treatment of syphilis they use mercury largely; to so great an extent as to damage the system permanently in many, and lead to a fatal termination in some. I have seen one fatal case, from sloughing of the cheek and necrosis of the inferior maxilla, from excessive salivation in a man with enlarged spleen, who was salivated for syphilis. Five of the above-mentioned cases of leprosy had syphilis, and had undergone treatment for the same at the hands of native practitioners.

Mozufferpore.—The disease is certainly most common among the lower classes; but considering the vast excess of these over their richer brethen, I doubt if the actual proportion of lepers is greater among the poor than the richer classes.

a. There are a vast number of lepers throughout the whole of Nepal and the

Province of Tirhoot. This district is situated between latitude 25° 26′–26° 42′, longitude 14° 58′–87° 11′, and is bounded on the north by the mountainous country of Nepal, which separates it from the Himalays, and on the south by the river Ganges. The country is undulated, and like other parts of the valley of the Ganges is remarkably fertile. It abounds in lakes and fine rivers, by means of which the drainage of the Himalays pass into the Ganges. These streams overflow their banks during the rainy season, *i.e.*, between June and September, and lay the district for miles under water. The climate is mild and moist, as compared with some other parts of India, the maximum temperature being for the year 87°, the minimum 69°, and the mean 75°. The soil is formed from an alluvial deposit, and in many places is saturated with muriate of soda, sulphate of soda, saltpetre, and other salts; as a consequence a vast number of the inhabitants suffer from goiter. During the last six months no less than 6,000 goitre patients have been under treatment at this dispensary, the largest tumours being quickly cured by the application of the biniodide of mercury.

d. The population may be divided into four classes. The first composed of Brahmins, &c., including about 40,000 of the 3,000,000 inhabitants of this district; they consume daily in the morning about a pound and a half of bread made of wheat with four ounces of dâl (a kind of pea), an ounce of butter with vegetables and salt, and half a pound of fish or flesh; in the hot season they often take milk in place of animal food; in the evening they eat a meal, consisting of a pound and a half of rice with about the same quantity of dhye, or the curd of milk, and two or three ounces of dâl with butter and vegetables; sugar, spice, &c. are all added to improve the taste of the above articles of diet.

The second class, or Koormees, constitute about 80,000 of the population of Tirhoot. They usually take two meals a day. In the morning they consume a pound or a pound and a half of bread made of Indian corn and barley, together with three ounces of dâl and one of butter, to which they add usually, on three or four days of the week, half a pound of fish and flesh and vegetables. At night they take a pound and a half of rice with two ounces of dâl and a little butter, and half a pound of dhye. They drink more or less spirits according to taste.

The third class, which, if we include the lower order of Mussulmans with it, amount to nearly 2,000,000 people. They usually eat in the morning a pound of bread made of Indian corn and barley, or a pound and a half of rice, together with three ounces of dâl and a few vegetables; frequently to this they had some fish. In the evening they usually take a pound of rice with a few vegetables and salt. They drink spirits.

The fourth class, of the Mussulmans. These live much like Christians, and, with the exception of spirits and pigs' flesh, consume the same articles of food as we do.

Arrah.—It is almost entirely confined to the poorest of the poor and the lowest of the low; it is fostered, though not necessarily produced, by poverty. Those who have lived out here only know the straits to which the poor of the land (I don't mean beggars) are put to for food of any description, and these are they on whom leprosy fattens; yet the rich of the land are also victims, and with them it cannot be attributed to bad food. I do not believe that the disease is occasioned either by locality (*a*) or sanitary causes (*b*), but principally by the ordinary diet (*d*) and general way of living, influenced of course by the occupation (*e*) or employment, and indirectly by the habits (*c*) of life.

Bhaugulpore.—It occurs most frequently in the poorer classes, and is most common amongst the beggars in this country.

d. Their ordinary diet consists of vegetables and rice, and now and then fish, which is generally eaten when it is almost putrid. It is thought by the natives that leprosy is caused by eating bad rice; but I cannot give a decided opinion on this subject; but there is no doubt but that diseased rice, which the poorer class frequently eat, has a very detrimental effect upon the constitution.

Monghyr.—The natives here have an impression that oily aliments and fish diet favour the developement of the disease.

Gyah.—The diet of the poor of this district (in which the disease is common) is above that of the poor of Bengal generally; it consists of wheat, rice, dâl (pulses), fish, sometimes meat, and a variety of vegetables, among which the potato is not uncommon.

Patna.—*a.* The disease appears to be greatly more common among the rural population than in the city of Patna. The district is a low alluvial plain, liable to periodical inundation.

b. The dwellings of the lower classes are low thatched or tiled huts, with a small door on one side only; windows are not known, and there is no roof or other ventilation. The Hindoos plaster their walls and floor with cow dung. This adds to the coolness while it probably injures the salubrity of their huts.

d. The diet of the lower classes among whom leprosy is most prevalent consists, almost exclusively in this part of India, of rice and the pulses; but the poorest and most needy in the rural district subsist chiefly on a vetch, lathyrus sativus, an extremly unwholesome and indigestible article of diet, well known to produce paralysis of the lower extremities; it is cheap, 100 lbs. being sold for a rupee.

The pulses (or dâls), although rich in gluten, are heating. Natives in good health digest them; but in sickness, where any tendency to diarrhœa or dysentry exist, they disagree; and I have repeatedly seen relapses of dysentry follow on dâl being taken as an article of diet in early convalescence. Most of the pulses are cheap, from 40 to 60 lbs. being sold for a rupee; they are therefore easily obtainable by all classes. That the use of them as an almost exclusive article of diet causes leprosy in the predisposed is, I think, rendered highly probable, by what I have stated elsewhere as to the greater prevalence of leprosy among the rural population who consume the pulses in greater proportion than the inhabitants of cities. As the subject is of some importance, I will give the names of eleven species of dâls consumed by the natives of this district.

1. Urhur.—Cajanus indicus.
2. Ord.—Phaseolus radiatus.
3. Mat.— „ mungo.
4. Mung.— „ aconitifolius.
5. Mussaur.—Ervum lens.
6. Koorthee.—Dolichos biflorus.
7. Kessari.—Lathyrus sativus.
8. Gram.—Cicer arietinum.
9. Ankari.—Vicia sativa.
10. Sem.—Dolichos purpurea.
11. Muttu.—Pisum sativum.

The lower classes of the urban as well as the rural population use the Indian corn and the millets as an article of diet, mixed with the flour of wheat, and made into cakes. Melted butter is taken with them, but the poorer classes can afford very little of the latter, and sometimes use an acrid and impure oil in lieu of butter.

There are five species of millet in common use. They are

1. Koodo.—Paspalum scrobiculatum.
2. Bagaa.—Panicum spicatum.
3. Jamar.—Sorghum vulgare.
4. Kangune.—Paspalum scrobiculatum.*
5. Cheena.—Panicum miliaceum.

As far as I can ascertain, they are less nutritious than wheaten bread, being somewhat deficient in nitrogen, but they have no decidedly injurious effect on the constitution, and are easily digested.

Fish, as an article of diet, is used by every class of the natives; and in a country where decomposition is rapid it often happens that it is sold in a tainted state to the poorer classes. The use of tainted fish is believed, I think justly, to be a cause of leprous disease. Hot spices are mixed largely with the food of all classes of the natives when they have the means of purchasing them; and the lower orders of the Hindoos indulge freely in the use of a spirit distilled from coarse sugar and the pulpy corolla of the mowah, Bassia latifolia, or in the intoxicating juice of the Palmyra palm, Borassus flabelliformis.

Leprosy is not uncommon in the middle classes of natives; and this is not surprising, for, although their food is better, the state of their dwellings, as regards ventilation and cleanliness, is little better than that of the poorest class who live in huts.

Chumparun.—Their food is chiefly rice, fish and pulse are taken also, and vegetables are freely indulged in, as they are considered cooling. To the leprous patients the following articles of food are injurious. They certainly serve to bring on the attacks and increase the severity of them:—

Urid.—Phaseolus max et radiatus.
Khesári.—Lathyrus sativus.
Sein.—A flat bean, and keraö a small pea.
Sárú, a sort of rice, and jou, barley, fish, flesh, sweetmeats.
Baingan.—Solanum melongena.
Alina.—Convolvulus batatas.
Luthni.—Dissooria largeneria.†
Kohar or kohra, rape oil, and rice spirit, or indeed any spirit of any sort.

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* Should this not be Panicum italicum?—Kungoo (Bengalee).
† Probably, Dioscorea Lagenaria.

These certainly increased the suppuration of the korhi cases, either by over stimulation or by inducing dyspepsia, and the skin sympathising with the disordered state of the bowels. I have fed some of the patients on flesh myself, to test their own statements, and found that it increased the severity of the attacks. The other articles are certainly injurious, as they injure the powers of digestion, and alter and vitiate the secretions.

Interrogatory VII.

Calcutta.—Poverty, privation, and neglect, and syphilis, especially when complicated with the use of mercury.

Bancoorah.—If a man suffering from leprosy, but "well to do," is suddenly reduced to want, the disease is augmented; whereas, on the other hand, if the poor and needy are taken care of, washed, clothed, and well fed, the malady seems to be arrested in its ravages; if not altogether, certainly its progress is less rapid.

Pooree.—Poverty, excess of bodily labour, deprivations or distresses of any kind, chiefly those caused by long journeys or pilgrimages to Juggurnauth, insufficient nourishment, absorption of impure airs, such as from living in unhealthy localities, confined habitations, &c., laying out in the open air, and exposure to inclemencies of season, chiefly during the monsoons and cold weather; indulgence in intoxicating drugs, such as the preparations of hemp and opium; dissipations of all kinds, particularly excess of venery (as was the case with the late Rajah of Pooree, who, as I said before, died from this disease and syphilis at an early age), want of proper medical and other hygienic means, and the abuse of remedies, such as mercury, which is sometimes prescribed by the ignorant quacks in the early stages of the disease, mistaking it for syphilis, not to mention the existence of a scrofulous or syphilitic taint; these then seem to be the most common aggravating circumstances of the disease as I have seen it among the people here. Instances of each particular one mentioned have repeatedly come under my notice, as they have been treated at the Pilgrim Hospital. I may mention that, of all the causes I have enumerated, sufferings from long journies, such as caused by bad food, bodily exhaustion, and exposure to inclemencies of season, seem to exercise the most deleterious effects in aggravating the disease, and hastening it on to a fatal termination. Many a life has been frequently prolonged under such circumstances from proper treatment, nutritious diet, and proper shelter afforded them in the Pooree Pilgrim Hospital, where these unfortunate sufferers have constantly been taken in.

Hazareebaugh.—The disease appears to be both aggravated and accelerated in its development by the excessive use of stimulants, such as ardent spirits, and by the indulgence in extra quantities of salt with the food, as well as by eating sweetmeats, also if the physical strength be over-taxed by laborious occupation of any kind.

Monghyr.—Poverty decidedly, and its accompanying evils. Almost all the leprotic patients have the impression that some previous illness, especially cutaneous disease and syphilis, has preceded or aggravated their affliction; probably an exhausting disease caused the first manifestation of leprosy they have noticed.

Gyah.—Any circumstances tending to weaken the constitution generally, as damp, unwholesome air, a less nutritious diet than usual, depression of spirits, &c. These two latter have a marked effect in advanced stages of the disease. When leprous patients do not come much into contact with other people, when virtually they have become outcasts, and have to shift for themselves, then the symptoms become aggravated and the course of the disease more rapid.

Seraigunge.—This disease, when it has manifested itself in an individual, is accelerated or aggravated, in my opinion, by indulging too much in drinking alcohol, venereal pleasure, and exposure to intense heat; this I have seen in many individuals.

Chumparun.—When the well-to-do farmer of middle age finds himself becoming leprous, he covers up the part, abstains from all stimulating food, drink, and spices, shuts himself up, keeps the part covered and concealed as long as he can, takes the simplest and most cooling diet, and runs into no excess of any kind. This man will have the attacks very rarely, and the progress of the disease will most probably stop at the sunbahri (anæsthetic) stage, and never go on to the kor form. If, on the contrary, he is poor, and has to beg or work, or take to stealing, he eats the cheapest and

therefore the worst food, and badly cooked; he drinks the rice spirit, and exposes himself to the sun and the weather; takes to travelling from one sacred shrine or part of a river to another, and lives an improper life; his attacks will be frequent, korhi will early establish itself in him, and run its loathsome and fatal course.

Interrogatory VIII.

Calcutta.—I believe the disease to be hereditary, though from the statements of the lepers examined by me the reverse would seem to be the case.

Moorshedabad.—The general opinion is in favour of its hereditary character. Lately I had an opportunity of seeing a leprous infant whose father was suffering from the disease in the tubercular form on his back and shoulder. Instances are frequent when only one member of a family is affected.

Pooree.—Yes; the disease does often appear to be hereditary, as may be seen from the accompanying table, where out of 105 cases 31 give a strong suspicion of hereditary descent, from the circumstances that either one or both of their parents, or other near relatives or friends, have had the disease before them, and the patients themselves could give no other reasonable or probable cause for it. My own opinion is, that even a much larger per-centage of the cases owe their existence to this cause than appears from the table.

Many instances are mentioned by the people where only one member of a family was affected, while all the other members remained free from any trace of it. I have also seen several cases of the kind myself.

Sumbulpoor.—The disease does not appear to be hereditary as a general rule; but it is somewhat singular that two brothers, or a brother and sister, may be, and often are, affected, when their father and mother and ancestors and other brothers and sisters were not, and are not, affected; but there are also numerous instances in which only one member of a family has been affected, as far as could be made out.

Jessore.—If the disease is hereditary it sometimes makes its appearance very late in life, for I have often seen mothers affected whose children seem strong and perfectly healthy.

I have known very many instances where only one member of a family has been affected, while all the other members remained free from any trace of it, although living together.

Furreedpoor.—Notwithstanding its undoubted power of transmission from parent to offspring, it is also a noted fact that it is often capable of spontaneous origin, and that these idiopathic cases are just as numerous, if not more so, especially in the tropics, as those which could be alone traced to parental influence.

Mozufferpore.—I am quite convinced the disease is hereditary. I know of many cases of leprosy in which some of the members of the family have been free from the disease, but in these instances the children have, for the most part, been born prior to the symptoms having been developed in the case of the parents.

Arrah.—Hereditariness is the predisposing, and bad food the exciting, cause of the disease; the fact of its appearing amongst the rich and wealthy shows that it must be hereditary. There are instances of the father being a leper, his children free from the disease, which reappears among his grandchildren.

Monghyr.—If we are to put confidence in the general assertion of the lepers themselves, it would appear that in by far the greater number of cases the disease is not hereditary.

Patna.—All the forms of leprosy are hereditary; numerous cases prove this; but natives almost always from motives of shame deny that leprosy exists in their family. I have known several instances where only one member of a family was affected with decided leprosy; but a careful inquiry will often show that a leprous taint or diathesis exists in some of the other members of the family, although the disease has never been developed.

Rungpore.—It is in many cases hereditary; sometimes in a sort of modified form, and this will often be apparent from birth; thus the offspring of a leprous parent may be born with bent fingers or toes, or certain members, as fingers, ears, or arms, may be entirely wanting.

I have seen many cases where the diseased person was the only one of the family so affected.

Chumparun.—I have found it hereditary among the few, but it is most distinctly acquired in the large majority of the cases that occur both here and in the Terai.

Interrogatory IX.

Calcutta.—Leprosy appears to be often dependent on and connected with syphilis.

Bancoorah.—I do not believe that leprosy is in any way dependent on syphilis, but I am not so confident as to the yaws. * * * The natives of this district attribute, in some cases, the beginning of leprosy in one member of a hitherto free family, which afterwards becomes hereditary, to the abuse of mercury.

Moorshedabad.—I believe leprosy is very often connected with, if not dependent on, syphilis; and the abuse of mercury is general in native practice.

Poonee.—I have no reason to believe so. * * * On the other hand, there is no doubt that the existence of syphilis is a most aggravating circumstance, and presents one of the worst states of system possible for the supervention of leprosy, certainly inducing a more rapid destruction of the bones and the other structures, and also presenting, from the existence of two poisonous matters, as it were, in the system, a highly rebellious case for treatment.

Cuttack.—I do not think so, but I do believe that leprosy is apt to be more violent in a person who has had syphilis. The poison I look upon as perfectly distinct, although some of the symptoms of the one occasionally resemble those of the other.

Furreedpoor.—Leprosy is essentially an independent disease, having no relationship or connexion whatever with other maladies.

Chittagong.—Leprosy is not connected with syphilis. * * * What can be more conclusive on this point than the fact that among the Chukmas syphilis is unknown, yet leprosy is to be found?

Pubna.—I do not think that leprosy is connected with syphilis, but I believe that it is connected with scrofula in some cases.

Serampore.—In cases of secondary syphilis, in which mercury has been administered over and over again, the disease has not unfrequently degenerated into leprosy.

Bhaugulpore.—I have very good reason to know that leprosy is dependent on syphilis, for I have known several cases that have been preceded by syphilis.

Gyah.—The difficulty of attempting in this district to connect any disease with syphilis is very great, because nearly all the natives have had syphilis, and have taken mercury largely for it.

Patna.—I have seen several cases where secondary or tertiary syphilis simulated leprosy, and such cases have been mistaken for leprosy; a leprous taint or diathesis existed in these cases, but the disease superinduced was syphilitic.

Rungpore.—It very often appears to be dependent on syphilis for its development; a secondary syphilitic sore will often, through want of attention and cleanliness, apparently assume the characteristics of a leprous sore.

Chumparun.—With syphilis it has no connexion whatever, though many of the people think so. The hakeems try to describe seven varieties of leprosy, but they have never been able to give me a distinctive description, and several of the cases they showed me I at once detected to be secondary and tertiary syphilitic skin affections; and questioning the men at once proved my diagnosis.

Interrogatory X.

Calcutta.—Never. Healthy men have dressed the ulcers of lepers and washed their soiled bandages for years without a trace of the disease appearing on them.

c. Yes.

Bancoorah.—Yes, when the disease is in the stage of ulceration; but there must be actual contact either of the person or clothes worn by the sufferers, or from bathing in the same reservoir.

c. A case is mentioned where a man, none of whose family, he said, were lepers, became affected after marriage. "Soon after the birth of his first child, he discovered his wife to be a leper, and very shortly after became one himself."

Moorshedabad.—It is reputed to be so, but I can give no proof of such being the case.

Raneegunge.—I have repeatedly heard of such, but cannot, of personal knowledge, give examples.

c. Yes; decidedly, in the severer forms.

Sumbulpoor.—*a.* On the subject of contagion there appears to be some room for doubt. I have never known or heard of a case in which simple contact on one occasion has produced the disease but by prolonged liability to contact with, or close proximity to, diseased persons, there is reason to believe that the disease has been reproduced. The natives of Sumbulpoor do not themselves believe that leprosy is contagious.

c. I have not been able to obtain any proof of such transmission.

Cuttack.—I have met with one undoubted instance in which the disease was communicated by contagion.

a. The disease was in its last or ulcerating stage; the fingers and toes had nearly all dropped off.

b. The following is the history of the case:—Agadoo Doss, aged 30, a Brahmin, states that none of his family had ever suffered from leprosy. His parents are both dead, and his five brothers and sisters, who are all living and quite healthy, have made him an outcast in consequence of his disease. He is a married man, but never lived with his wife. He has never had syphilis. When about 12 years of age he suffered from fever, but until he got leprosy remained quite healthy. He caught the leprosy from his master, a merchant, whose bearer he was for 12 years. His duty was to wash and dress this merchant's sores, and lift him in and out of bed. The merchant died three years ago of leprosy. At the time of his death he was covered with sores, and had lost several of his fingers and toes. The bearer was attacked within 12 months of his master's death; it commenced as patches on the fore-arms, which gradually spread over the body; at the same time anæsthesia of all the affected parts set in; the skin of the face, nose, ears, lips, and brows became thickened, the conjunctivæ red, and a sore broke out on the right foot. This is his present condition, and the disease is still advancing towards its worst phases. He himself feels quite certain that he caught the disease from his master.

c. The disease does not appear to be transmissible by sexual intercourse.

Chittagong. Never; the natives will not allow that it can be communicated to healthy persons by an unhealthy one.

Tipperah.—No; though a belief prevails among the natives that it is contagious.

Mozufferpore.—I know of many cases in which there was a clear proof of the contagious nature of the disease. A very good instance of the kind was related to me by my sub-assistant surgeon this morning. He has lately come down from Almorah. During the year 1852 he first became connected with the hospital established there by the mission for lepers; at that time the chokedar and his mate were healthy men, and though constantly with the patients in the establishment they lived at the entrance gate leading into the hospital compound; in 1856 both of these men were inmates of the hospital, suffering from the very worst form of leprosy. There was not the remotest reason to suppose that the parents or relations of these men were affected with the disease, and there is only one way of supposing they got it, and that was by contagion.

a. I believe leprosy is alone contagious when the ulcerative stage has commenced, and it appears as if the disease took a very long time to affect the system. It is not a matter of days, or even months, but often of years.

The parents of female children having leprosy will frequently destroy their offspring.

c. Yes; there can be no doubt about it.

Arrah.—As far as I can ascertain, it is not known to be contagious or infectious.

c. I cannot ascertain; the hakeems say no.

Monghyr.—I can adduce no case of the disease as the result of contagion. I know, however, a very intelligent native practitioner who was not afraid of giving his only daughter in marriage to a man of 20 years, although he was born of leprotic parents, and himself showing already symptoms of the affection. This case would tend to prove that, in the opinion of even educated natives, leprosy is not contagious.

Patna.—I have never been satisfied with the proof that the disease is infectious, and suspect that, in the supposed cases of infection, a leprous taint previously existed, and that the disease was inherited, or arose from circumstances in the condition of the affected person independent of infection. Natives will often touch leprous patients without dread of infection.

c. I have not met with or heard of any well-authenticated case of the sort.

Midnapore.—Never. There is now living in the town a woman whose husband has been suffering from leprosy for many years, and all of his children are also lepers; the woman herself is quite free from any trace of the disease, although she has constantly attended to her husband and children, and the discharge from the ulcers has frequently come in contact with her hands.

All the evidence I can get goes to prove that leprosy is not transmissible to the female by sexual intercourse. It is common among the poorer classes to meet with a leprous man living with a healthy wife and begetting children; yet I have never been able to hear even of its suspected communication to the wife.

Where only one of the patients is a leper, the children born to them do not necessarily become leprous, yet the majority are attacked with leprosy.

Chumparun.—No; nor does a leprous husband give it to his wife by sexual intercourse. Of this I have known several unmistakable instances.

Interrogatory XI.

Calcutta.—Yes; they are to be seen at all the bazaars, where some of the principal beggars are lepers.

Burdwan.—Yes; segregation is enforced only in the gaol.

Moorshedabad.—Yes; but their own relatives consider them unclean, and treat them accordingly; they are turned out of house and home, and made to shift for themselves.

Pooree.—Among the respectable part of the community a leper is not allowed to sit in the same room or house with a pure individual, who will not also on any account suffer him to even touch his clothes or his body.

Again, when a leper dies, no respectable person is to attend his funeral. This is done not so much for the sake of preventing infection, but because, as he is looked upon as a being specially afflicted and visited by the curse of the Almighty, it would be sacrilegious to pay him any respect, or join in any religious ceremonies over his remains. In like manner, to show the same contempt for his body, and extreme impurity and foul nature of the disease, the body of the unfortunate creature is not, according to the rites of the Hindoo religion, burnt, and the ashes from it cast into the sea or river, but buried, and that too by low-caste individuals, such as sweepers, &c. This is about the greatest indignity that the corpse of a Hindoo could be subjected to, and is never done, I believe, in any other case or disease, except when the individual has departed from his religion. It must, however, be remembered that these restrictions are not always enforced, a great many people or families taking no heed of them whatever, permitting intercourse of every kind between diseased and healthy members, and even marrying and giving in marriage among them.

Raneegunge.—No restrictions by law, but the people avoid them, and consider they are the most depraved of the human race.

The general expression is, "God has punished them for some great sin they have committed;" and it is very difficult to get anything further out of them.

Mozufferpore.—There is no law to prevent persons affected with leprosy residing in the district or mixing with the community, but the people have such a horror of the disease, especially as it gets worse, that they will turn their own relations out of doors to die on the roadside.

Midnapore.—Leprous persons are usually placed on one side of the house, away from other members of the family, and are obliged to cook and eat their food separately.

This applies only to those that are tolerably well to do in the world, as among the poorest classes the only measure of restraint is that they are obliged to eat out of a separate dish.

Chumparun.—They are allowed, and the only separation imposed on them is that of caste. The man of high caste is turned out of it, and looked on as having angered the gods, and disgraced them and him; his daughters, though not lepers, cannot get married, nor can they be readmitted into caste. If he is of a low caste, he often remains with his friend. If a father and a husband, he retains his position as both, though even he and they are looked down upon by the others, and his daughters cannot get married in his own caste, unless at an enormous expense on the part of the father.

Interrogatory XII.

Calcutta.—There is an asylum for the reception and treatment of the leprous poor, who are not admitted into the general hospitals or dispensaries. The asylum is composed of several detached buildings, well ventilated and dry; some capable of holding from 18 to 20 beds, others from 12 to 14; the males being left strictly apart from the females. Their diet, when not under medical treatment for any particular disease unconnected with leprosy, is the ordinary food of the country, and what they have been accustomed to in their own homes. Those able to walk about do so on the premises, and are allowed to go out on leave. There is a native resident doctor and dressers with other servants for their comfort, and the medical officer attached to the institution sees them daily.

Pooree.—There is no special hospital or infirmary for the leprous poor; but there is a large and well supplied Government dispensary and pilgrim hospital kept up in one building at this station, into which a certain number of lepers who apply for relief are admitted, and supplied with medicines and food at the Government expense.

As it would be injudicious to accommodate infected patients in the wards, the lepers, when admitted, are kept in the verandah, where they receive all the attention necessary. Each patient has a separate mat allowed him to form part of his bedding, which is destroyed when he leaves, and if necessary a few pieces of old clothes to cover him and a blanket; his sores are well cleansed and purified by disinfectants of either chloride of zinc or lime, and dressed with poultices of charcoal, &c., or other medicines as required. No separate or special provision, as I said before, exists for these people; the only difference made with them is that they are kept out of the general ward, where all other cases of acute and interesting diseases are admitted, and every intercourse between them and the other sick prevented as much as possible.

Jessore.—There is no separate infirmary for them in this district; they are admitted into general hospitals and dispensaries.

Bhaugulpore.—The leprous poor are admitted in the dispensary as in-patients when they are in a very diseased state, and if not they are treated as out-patients.

Dorundah.—I am not aware that any public provision is made for the especial reception and treatment of the leprous poor. There is a charity hospital attached to the civil station of Ranchee, supported by the voluntary contributions of the residents of Dorundah and Ranchee, the Government furnishing a native doctor and medicines only. Into this hospital, which is under my superintendence, a limited number of leprous poor obtain admission.

Chumparun.—No special one; they are treated in the exterior department of the dispensary among other patients.

Interrogatory XIII.

Calcutta.—There are at present 48 lepers in the asylum; 33 men and 15 women.

Pooree.—It would be impossible to state with any degree of accuracy the number of leprous persons who are maintained at the public expense,—or rather more correctly, as no public provision exists here for them in the shape of an asylum,—the number of lepers who lead a life of mendicity, living entirely on the public charity, as their numbers vary so by constant additions and departures among the pilgrims, who constitute the chief class of people who have the disease among them. I find from the

only rough data at my command, obtained through the police, that there are about 200 persons of all ages who are living either partially or wholly on public charity as lepers. This, though I believe to be incorrect, and below the actual number to be found in Pooree, still may be looked upon as a near approximation to the truth.

Bullooah.—Many are maintained by private charity; none at the public expense.

Dorundah.—About fifty leprous patients are treated yearly in the charity hospital at Ranchee; some twenty live by alms received from residents of Dorundah and Ranchee.

Midnapore.—About fifteen cases are supported from the proceeds of a fund left for the benefit of poor of this station by the late Mr. Pearee. The cases that are supported are those in the advanced stage, and, from the loss of fingers, &c., are totally unable to provide their own subsistence.

Interrogatory XIV.

Bancoorah.—Respectable and intelligent natives, on whose veracity I can depend, assure me it has been a good deal on the increase, and they attribute this increase to the fact that the lepers are allowed to communicate promiscuously "without let or hindrance" with the rest of the community.

Pooree.—From what I can gather from the people and the hospital records, I may state that the disease does appear to be on the increase, though not to any great extent; still, if so, this is a fact of great significance, and shows that whatever circumstances do give rise or are obnoxious to it are more active and sure in their effects now than they were before. Of these I believe I am correct in stating that indigent poverty, caused by severe calamities of season, and the high prices of provisions prevailing in consequence, are the chief. The people are also poor from the cheapness of labour in this district, so that the majority of them are insufficiently fed and badly clothed. This state of things has prevailed more during the last few years, not only at Pooree, but nearly in all parts of India, and has, I have no doubt, contributed much towards the increase of diseases of the nature and character of leprosy, not only at Pooree but elsewhere. Rice, the staple article of the people's diet, has risen considerably in price. Where formerly it sold at 40, it now sells at 18 and 20 seers per rupee. Dhall or pulse, and mustard oil, with which the poor chiefly cook their food in place of butter or ghee, have also risen in like proportions. The consequence is, that the majority of the poor people live on plain boiled rice and salt, and that too in insufficient quantity.

Beerbhoom.—I believe that the disease is on the decrease, owing to a greater degree of prosperity among the people of the district generally; and this result, in my opinion, may be ascribed in a great measure to the construction of railways through the district, which has thrown large sums of money into circulation, and given profitable employment to large numbers of the population, thus enabling them to procure more of the comforts and conveniences of life, better food, and better protection against the inclemency of the weather or change of season; moreover, to relieve with a more liberal hand their poorer and more destitute fellow countrymen.

Jessore.—From minute inquiries I find the disease has gradually been decreasing in this district for some 20 years, attributable to the clearing away of jungle, drainage, &c., and therefore getting rid of a great deal of malaria; also the country being in a high state of cultivation instead of a swamp inhabited by wild buffaloes, which it was 30 years ago

Chittagong.—From a table drawn up from the admission book of the Chittagong charitable dispensary, from its institution in 1846 to the end of 1862, and recording the number of lepers treated yearly, their proportion as compared with other sick, &c., it appears that the number of cases of leprosy treated during the first two years more than double those in any of the succeeding ones. This is to be explained by the establishing of the dispensary, which attracted those suffering from leprosy, in the hope that some cure might be known there. From the gradual falling off in attendance, it may be surmised that treatment being found unavailing, the lepers ceased to come. From the large proportion of incurable, we learn that those who are grievously afflicted are the only ones who seek for European aid. I cannot obtain information to show whether the disease is more common now than it was formerly.

Hazareebaugh.—From inquiries, I believe the disease has neither increased nor decreased to any noticeable extent within the past 20 years.

Patna.—There is no ground for believing that the disease is on the increase, and I am of opinion that every improvement in the physical and moral condition of the population will cause a decrease in the number of persons affected.

Midnapore.—I cannot speak from personal knowledge, but two native doctors now under me, and who have been in this district all their lives, say that it has very materially increased within the last thirty years.

Rungpore.—I cannot from personal knowledge venture an opinion as to the increase of leprosy in this district, but on inquiry of the natives I am informed that it has increased greatly of late years.

Serajgunge.—To my knowledge, inquiry, and incumbency at several stations, the disease of late years, say during the last 15 or 20 years, is neither on the increase nor decrease in any district.

Chumparun.—More attended my dispensary during the famine year, 1861. It may be that these patients come more numerously to the dispensary during and since that time than previously.

Interrogatory XV.

Calcutta.—I have hitherto observed no satisfactory or encouraging results from the hygienic, dietetic, or medical treatment of leprosy. I do not believe that it ever undergoes a spontaneous cure.

Bancoorah.—The disease seems to always run a certain course, despite all known remedies; but the best plan I believe to be, simple poultices besmeared with "chaool-mogree" oil, rigid cleanliness, with tonics and a generous diet; in fact, as far as my experience extends, good nourishment seems to be the chief requisite in its treatment.

Moorshedabad.—Good food, suitable clothing, and protection from the inclemency of the weather, have a most beneficial effect on many cases of leprosy. These dietetic measures, coupled with cleanliness, and the medicinal use of arsenic, iodide of potassium, and, probably, mudar root powder (Calotropis Hamiltonii and gigantea), have a decided effect in checking the progress of the disease, and may in some few cases, when not too far advanced, effect a cure.

Pooree.—The effect of pure air and good diet combined is no doubt remarkable in keeping the disease to a certain extent under control, as may be seen from the fact that, immediately the patients leave the hospital and go back to their dirty hovels, and live on all kinds of bad and impure food, the sores which had healed over for some time, and showed no tendency to break out afresh, inflame and ulcerate again, with a tendency to increase and implicate other structures, all going on as badly as before. I am not so sure, though, if diet has the same effects over the disease in its earlier stages; we do not admit cases of it generally till it is far advanced; but to judge from what I have seen of it out of hospital and among the people it does not appear to have the same controlling power over it, the disease seeming to go on in its usual course from slight to worse.

The most that can be said to have been accomplished by medicines has been an arrest of the destructive process for a time, and, may be, if taken in hand in its earlier stages, a stoppage to its further progress altogether. I may safely state that I have never seen a true case of leprosy yet cured, either by the aid of medical, hygienic, dietetic, or any other means, or by any inherent curative or spontaneous action in the system.

As to the effects of the chaool-mogree oil, it has been much over-rated; and I must confess to having seen but little good from it, either in its internal or local use, the sores healing as readily, if not better, under the use of other remedies. It is an oil of a highly nutritious character, and so may do good by supplying deficient nutritive materials, but does not, as far as I have been able to ascertain, possess any specific effect over the disease, which I do believe is to a certain extent possessed by arsenic and mudar, especially when they are administered in combination.

Maldu.—I have known it to be much benefited by cleanliness, generous diet, and general tonic treatment, and free and fresh circulation of air; the baths being pure, fresh or tepid water, frequently repeated according to seasons.

Bhaugulpore.—I have found in the lepra tuberculata virulenta the potass. iodid, liquor potassæ arsenicalis, and acid nitric, very useful. The Hindoos have several remedies for this disease. The following has been found very useful:—

R. Protoxyde of arsenic, gr. lv.
Mudar powder, oz. iv., gr. lxxx.
Black pepper, oz. ix.

This is made into 800 pills, and two of these are given every day.

Monghyr.—I saw several cases obtaining considerable relief from hygienic measures, well-regulated diet, and the use of arsenic, asclepias gigantea, but especially the oil and poultices of the seeds of Chaulmoogra odorata (Pangiaceæ). In case No. II., Lawsonia inermis applied in poultices proved beneficial. I saw indolent leprotic ulcers which threatened to detach toes and fingers completely healed up under chaool-mogree. The scars, however, were wanting in pigment, and affected with anæsthesia. But this satisfactory condition, such as it was, did not last many months, because, without any apparent stimulus, small blisters formed on the scars or other parts of the body, followed by unhealthy looking ulcerations, which, if healed over, were again succeeded by others. These temporary cures, however, I observed merely in young subjects, and where the constitution was not broken down. I know of no case in which a spontaneous cure occurred.

Midnapore.—In the cases treated by me I have always allowed a liberal diet, and the remedies that I have found to be most useful are cod liver oil, liquor arsenicalis and chaool-mogree oil. These are the only three remedies I place much confidence in, although I have used several others, but without much apparent benefit.

In lepra anæsthetica I have found counter-irritation along the course of the spine most useful. I usually apply it after the native fashion; viz., by application of a heated iron, and the sores resulting I either keep open for some time, or else renew them in an adjacent spot; and under this plan of treatment, combined with one or more of the remedies above mentioned, sensation very soon becomes restored, and the patient is comparatively cured; but I should hesitate to say that I have ever seen a perfect cure, as, I believe, the disease is very liable to recur.

I have tried the powder of the bark of the root of the asclepias gigantea, but consider it much inferior to the three remedies named above.

Leprosy, I believe, never undergoes a spontaneous cure. It, however, remains in abeyance for many years in some cases.

Chumparum.—I give arsenic internally to excite centrically the polarity of the spinal cord, as it were; while I gave sulphur vapour baths, friction to the parts which had lost their sensation, thus stimulating eccentrically the proper functions of the affected nerves.

The disease, thus attacked from within and from without, invariably yielded when the patient was long enough under its influence. The result was that 20 were cured of combined sunbahri and korhi; the sensation returning to the patches, and the colour and function of the skin and its glands becoming as natural as they had been. 55 were relieved, and were improving daily, but could stay no longer at the dispensary from their homes and farms; 12 stayed so short a time that they were put down under the head of "no better." 25 were patients in the advanced stage of korhi, and were incurable. 102 left in a day or two; they were travellers, and were set down under the head of "ceased to attend."

When the patients lived pretty near, and could come to me in January or February, or when they felt that an attack was approaching, I have put a stop to the coming on of it by the above treatment. The sensation often returned to the fingers and toes up to as far as to where the thickening commenced; this deposit and the cracked condition remained unaltered.

I have never known any case to cease from spreading longer than three years; but then I have not had a case under my observation longer than that time. They get better of the attacks of themselves, but I don't think a spontaneous cure is really affected.

Interrogatory XVI.

Calcutta.—The estimated population of Calcutta at the census taken in 1850 was 415,063 inhabitants. There is no registration of births and deaths.

Pooree.—The present estimated population of the town of Pooree or Juggernauth may be safely given at 28,000 to 30,000 souls; and out of these the number of lepers, as

they are seen, at 200 at least. More no doubt could be found, but owing to the in-door confinement of females, &c., which is common to all Indians, the exact number cannot be arrived at.

Interrogatory XVII.

Calcutta.—The farther spread of the disease can only be prevented by the sexes being kept apart, as far as in our power lies; and good shelter, wholesome food, and attention to personal cleanliness will always tend to the mitigation of leprosy.

Pooree.—Mr. Durant has sent three photographs of lepers, showing the tubercular and mutilating forms of the disease.

No printed books or records of any kind descriptive of the disease as it occurs in this district exist, nor have any other works bearing on the vital statistics of this district ever been written, as far as he is able to find out.

Beerbhoom.—With regard to the predisponent or exciting causes to the disease, prevention, mitigation, or cure, I believe that poverty, filth, dissolute habits, &c., &c., to be the principal predisposing causes, and that the best means of prevention, mitigation, and cure would be the spread of civilization, and with it more of the comforts and necessaries of life, less poverty and greater morality; the introduction of conservancy or sanitary laws into every district throughout the country, strictly administered under the directions of health officers; the establishment of proper hospitals and asylums for the reception of the sick poor and lepers, supported at the expense of the large landed proprietors of each district, as are such institutions in Great Britain. When such changes and means of amelioration have been accomplished, I have no doubt the disease will become quickly extinct, as in other countries where it once prevailed, and has disappeared before the advance of an enlightened civilization, national prosperity, and its concomitant advantages.

Mozufferpore.—I have made five post mortems upon the bodies of leprous patients, my attention being more particularly directed to the nervous system; and neither in the nerves themselves, nor in the brain and spinal cord, have I been able to detect any lesion, either with the naked eye or by the aid of the microscope.

Hazareebaugh.—Leprosy has been supposed by some to be possibly caused by eating a peculiar pulse called by the natives "teyorâ." Another species of the same dâl has certainly been proved to have a deleterious effect on those who make use of it continuously; I mean the "kheysari," the chickling vetch or lathyrus sativus; indeed its very name in Sanscrit, "khanjakuri," implies "lame-making."

I believe in the districts of the Upper Provinces, especially the Punjab, where the disease is particularly prevalent, the inhabitants of those parts, besides consuming very large quantities of salt with their food, make use of a peculiar description of that article called the "loharrea" nemuk; whether there is any thing in its composition that causes it to act as a predisponent or excitant to the disease may be worthy of investigation.

Monghyr.—The only data, as to numbers, I had in my power to collect, are the following two; viz., the result of the examination of the prisoners in the gaol and the village police staff:—

Among 358 prisoners there were 28 lepers, giving a per-centage of 7·82, and among 134 village policemen, five, consequently 3·73 per cent. The prisoners give a safer index to go by than the latter, because, not only is here the female population left out altogether, but no leper would, ipso facto, be employed as a watchman, if in an advanced stage of the disease.

Patna.—I have no exact data to enable me to reply to this question. That a leprous taint is very common among the rural population of the district of Patna is proved by the following facts:—Within the last six months I have had to examine 2,348 men, intended for the new police of the city and district of Patna: these men appear before me in a state of nudity, with the exception of a cloth about the loins; traces of leprosy are thus easily observed. The average age of the men examined was 23 years. I found a leprous taint or diathesis to exist in one out of every ten, and this proportion was rejected as unfit for service.

When serving with the native army, I found repeatedly that men who had in early life the characters which I regard as a proof of the existence of a leprous taint,

and which I have already described, frequently had to be invalided in after years for leprosy.

Of 348 male prisoners, 292 Hindoos and 56 Mussulmans at present in Patna gaol, 17 of the former and 1 of the latter were found to be affected with leprosy. While writing this report 32 watchmen belonging to the city of Patna were sent to me to be passed, if efficient, into the new police; the average age of the men was 36. I found among the persons examined two cases of leprosy advanced to the ulcerative stage, and one case of incipient leprosy. The affected mixed freely with the other men.

II. NORTH-WESTERN PROVINCES.

Benares Circle.

Interrogatory I.

Benares.—a. There are three forms, viz.: the anæsthetic, the tubercular, and the discolored.

The two first forms are, in my opinion, varieties of one common morbid state, and generally show themselves first as an eruption, with more or less disturbance locally of the nervous system. The third form is a specifically distinct disease; there is no nervous lesion and no deposit; its character is rather negative, being shown by the absence of the pigmentum nigrum.

The third form commences by a mottled appearance of the skin, generally in the face or hands; the spots affected gradually become rose-pink, or nearly white; it is unaccompanied by any want of sensibility or constitutional disturbance.—(*Dr. Dunbar.*)

Ghazeepore.—Leprosy is a very common disease in this district. The general characters of the anæsthetic form (soonbeharee) are these:—The eruption on the extremities or trunk, or on the head and face, of spots, circular at first, but afterwards irregular in shape, varying in size from that of half a split pea to a patch of from six to eight or more inches in diameter, of a reddish colour in recent cases, but subsequently several shades lighter than that of the surrounding healthy skin; their border raised about one half to three fourths of a line above the surface, granular to the touch, like a circle of grains of sand, and from one to two lines broad; within this outer margin, surface of skin smooth, thinner than normal, seemingly depressed below the surrounding healthy surface; hairs absent or stunted; rarely scales or desquamation; no cracks; occasionally a few isolated tubercles.

The lesion of sensibility is thus noticed:—In very many cases at the very commencement there is an exalted or deranged condition, indicated by tingling and constant itching. As the disease advances these symptoms disappear or are less observed, and the surface of the spot becomes first numb and afterwards entirely devoid of sensation (anæsthesia). As long as the circular outline is retained, the anæsthesia is confined in a marked manner to the part within the raised margin, sensation ceasing at the border of the spot; but in the large irregular spots this limitation of the anæsthesia to the part visibly affected is lost, and you find diminished sensibility or total anæsthesia extending some distance beyond the tubercular or visible margin.

In the tubercular form (kohr), the skin of the forehead and eyebrows is raised and prominent, the brows overhanging the orbits, the hairs absent or stunted. The colour of the skin is either red or many shades lighter than that of the surrounding parts. Sensation is deficient or much diminished; there is no distinct margin, but the skin is considerably raised, and somewhat nodulated to the touch. The ears are similarly affected, especially the lobules and margins of the helix; the colour is red, the part much thickened by deposit, and the sensation diminished or absent. The nose, especially at the alæ, is similarly affected, and in cases of long standing the skin of the cheeks and lips are also diseased and raised into folds. The expression given to the countenance is peculiar, hardly to be mistaken, and far from pleasing, there being an almost entire absence of expression. The mucous membrane of the gums, mouth, fauces, and pharynx is found in a similar condition, and in one marked case (a prisoner in gaol) all the teeth but one have dropped out within a few years.

On the arms, and especially the legs and trunk, this deposit in the skin is more extensive, appearing as broad long patches of skin, raised, nodulated, dry, hard, and

fissured on the surface, having much the appearance of the skin of one of the pachydermata. Sensation is entirely deficient or nearly so.

The muscles, especially of forearm and hand, are wasted and almost powerless; the bones prominent; the fingers thin and distorted; and the interosseous spaces strongly marked. As the powers of extension and flexion become less and less, and the muscles more or less rigid through atrophic degeneration, the flexions exert their natural sway, and the fingers remain more or less fixed in a flexed position. Similar changes go on in the nerves and muscles of the legs. At first the patient complains of weakness, inability to stand long, and when walking he drags his legs. The sensation is lost, and the muscles shrink. The skin of the toes and feet often inflames from exposure to fire, as that of the hands does. As the disease advances we find further changes indicative of deficient nerve power. At the base of a finger or toe an ulcer is formed, either the result of a burn or injury, or the sequence of a pustule. It does not heal, but spreads; the discharge is thin and ichorous; the subjacent bone becomes carious, and ultimately the finger, toe, foot, or hand is lost. Similar changes go on in the nose and nasal bone, and not unfrequently you find the nose entirely wanting.

These two varieties or forms of leprosy are one and the same constitutional effection, differing only it its local manifestation.

The third form (churruk) consists only of white patches of the skin; there is no anæsthesia and no appreciable deposit.

Azingurh.—Leprosy is not so prevalent in this as in some other districts, and but very few opportunities has occurred of learning anything about this disease.

Jounpore.—Leprosy is known in this district, but the disease is rare. In my own practice I have only met with a few cases, and from inquiries made of those residing in the district, several of whom are old inhabitants (Europeans), I find the fact of its rarity confirmed.

Goruckpore.—Leprosy occurs in this district under several forms, which do not seem generally to have distinct names. The disease is called most commonly in the early stage soonbeharee, signifying anæsthesia. In after stages, when thickening and ulceration come on, the name juzam (an Arabic word) is generally used, the common people using the word korh; leprous people being generally known as kori, and looked upon with hatred by the common people, as being under the curse of God; but the people do not on that account eject them from their houses, or refuse to associate with them.

Elephantiasis of the extremities, called by the natives filpal, is very uncommon up here. Elephantiasis of the scrotum equally so, and they are not supposed by the people to be in any way connected with leprosy.

Mirzapore.—It occurs here in three different forms:

1st. That in which fingers and toes are more or less destroyed, called in Hindee korh, in Persian juzan, and in Bengalee mohabad.

2nd. That characterized by local anæsthesia, called in Hindee soonbeharee.

3rd. That distinguished by pale rose-pink spots, called in Hindee phool ajeetbun, in Persian bars.

The two first forms are constantly met with in the same person, and are varieties of one common morbid state; the third form is a distinct disease.

Cawnpore Circle.

Allahabad.—Leprosy is very common in these provinces. It is very rare, however, for any prisoners affected with the disease to be admitted into the gaol; hence my experience is small.—(*Dr. Jackson.*)

The forms of leprosy observable here are, lepra tuberculosa, anæsthetica, and alba.

b. The two first are, in my opinion, only varieties of the same morbid state of the blood, for they both eventually terminate in the same way, viz., in mutilation of the extremities. The white form appears a distinct disease, for it never, as far as I am aware, ends in mutilation, nor has it any symptoms in common with the others. white spots are certainly seen in those forms, which at first sight appear to resemble those of the latter; but on closer observation they are found to be hard glistening circatrices of ulcers formed during the progress of the disease, whereas the spots of the white form are simply change of colour without any ulceration, and they are more snowy white than the others.

c. The first form, when fully developed. is characterized by a thickened and nodulated appearance of the skin, more especially of the nose, ears, and face, causing

great distortion of the features, loss of hair of the beard and upper lip, and gradual loss (partly by ulceration and partly by interstitial absorption) of all, or almost all, the fingers and toes, and sometimes even, it is said, of the hands and feet also, but I have never seen such a case. The anæsthetic form eventually goes on to the same amount of mutilation, but the skin of the face and body has a natural and healthy appearance. White leprosy, as most generally seen, consists of snowy white spots of various sizes and shapes over different parts of the body and extrimeties; the inside of the lips also often turn white, and occasionally the whole surface of the body becomes affected.—(*Dr. Cockburn.*)

Furruckabad.—Leprosy exists and has existed in the district of Furruckabad from time immemorial.

a. It consists of two varieties, named respectively elephantiasis anæsthetica and elephantiasis tuberculosa; both are known in Hindostan by the common designation of korh. There is besides a peculiar affection of the skin, characterized by irregular shaped patches of a white colour, which is frequently confounded with leprosy, though it has no connexion with it, being merely an unsightly blemish not attended with any danger to health. I allude to that condition of the integument closed allied to albinismus, and known by the names of chloasma album, vitiligo, leucopathia, &c. In the East it is called besas.

b. The two forms of leprosy above mentioned appear to be merely modifications of the same disease; they co-exist under apparantly similar causes, and neither form exists apart from the other. People are also found affected with both varieties at the same time, and instances are not wanting in which one form is seen changing into the other.

Etawah.—Leprosy is well known in this district. It occurs under four forms; the ulcerated, the tuberculated, the fissured (when the skin is swollen, discolored, and deeply fissured,—nose, lips, ears, and face much swollen and disfigured), and the white (consisting of mere patches of white on different parts of the skin). The ulcerated is the true hereditary form of the disease, and out of numerous families I have known, both Europeans and natives, I shall briefly describe one.

A native wealthy family I have known for some years; the males, four brothers, have all been lepers; the women I have never seen, In these brothers a gradual development took place in the system, until the more severe form of the malady broke out in ulceration of the fingers and toes, the several joints of which gradually fell off. One of these brothers came under my treatment for dry gangrene of the toes. Strange to say, by treating him with stimulants, quinine, and a generous diet, the gangrenous parts sloughed away, and the patient recovered. About six months after, dry gangrene commenced in one of his fingers; no line of demarcation was formed, and the whole of the arm became gangrenous. This poor man, after suffering for about four months, expired.

These brothers have a numerous family of children in whom there is no development of the disease at present, but the boys all look pale and strumous.

Futtehpore.—Leprosy is well known among the native population of this district. The cases of this disease that have come under my observation from time to time are travellers who have been compelled by the ulcerated state of their feet and hands to seek aid at the charitable dispensary here, where they remain until they get a little better, and then proceed on their journey. On admission they show the usual ulcerated state of the extremities, having sometimes lost one or more fingers or toes from the disease.

Agra.

Leprosy is found in all parts of the North-Western Provinces and Central India.

a. The disease appears in various forms. The characteristic native name is korh, but for practical purposes these may be considered varieties of the same morbid state.

The ordinary form is indicated by a glossy puffing of the face and ears, loss of sensation of parts of the body, and painless fœtid sloughing ulceration of the extremities.

White patches on the skin and irregular puckered tumours forming over the body and on cicatrices of wounds. Elephant leg and great scrotal tumours (found most commonly near the coast) belong to the same family.—(*Dr. Murray.*)

Leprosy is well known in Agra.

a. There are three distinct forms of the disease: namely,—1st, anæsthetic; 2nd, tubercular; 3rd white leprosy.

b. In my opinion the two first varieties are caused by one common morbid state of the blood; the last one is a distinct disease, having no affinity with the other.

(*Meer Ushruff Ally.*)

Banda.—Leprosy is very frequent in this district. It may be divided into the black and white forms, varieties of one common morbid state, although in appearance these two forms are very different, and also to a great degree in their effect on the general health and constitution.

1st. The black leprosy, called by the natives (kala korh or juzam), is the most offensive and distressing form of leprosy. At the commencement the body generally is swollen, the skin feels harsh and stiff, and there is always numbness of the extremities, which numbness extends gradually to the whole surface of the skin, the face looks bloated, the ears externally are red and swollen, the hair on head and eye brows gradually falls off, the cartilages of the nose ulcerate, and in time the nose flattens, the voice becomes hoarse, rancous, and the breath fœtid from disease of the cartilages; the nails split in pieces, and the skin cracks and ulcerates.

2nd. The white leprosy (sufaid korh or baras), to external or outward appearance is less offensive, and, I believe, does not undermine the health so speedily as the black form. The skin at the commencement whitens in patches; generally, I believe, where bones are near the surface, such places as the angles of the jaw, or tibia, &c., being usually disfigured by the disease. On parts affected the hair becomes white. The skin all over the body becomes rough, and, I think, harsh and stiff, as in black leprosy. The white patches have in some a creamy appearance, in others a glistening white colour. It is said the skin does not perspire in this form of leprosy. In many cases the palms of the hands and soles of the feet become benumbed. It is doubtful if the skin cracks and ulcerates in this form of leprosy. In the majority of cases it does not, but in some the disease terminates, as in the black form, by ulceration and falling away of the bones.

Jhansi.—The disease exists in this city. Having only met with one or two isolated cases during a residence of eight years in India, my attention had not been directed towards this disease until the receipt of these questions.

Ajmere.—There are not many cases of leprosy in this district. Skin diseases, it is true, are very prevalent; they assume various types and characters, from a common herpetic eruption to the most inveterate form of lepra, but there are fewer cases of lepra here than in most other districts.

The native hakeems recognise two kinds, korh and juzam; these, however, appear to be only varieties of one common morbid state.

There is no mistaking a case of bonâ fide leprosy when once seen. Large scaly patches, shiny and circular, are found all over the body; the skin is cracked, and has a very disagreable odour; there is often a very fœtid discharge from the nostrils; ulcers form about the finger and toe nails, and it is not unusual for a patient to present himself with several fingers and toes eaten away, the stumps in some cases looking as though they had been gnawed by some animal.

Meerut Circle.

Meerut.—Leprosy is well known in this district.

a. Two forms have been personally noticed by me.

b. In my opinion the two varieties are results of a common morbid state.

c. Primarily loss of sensation in the part affected; abnormal thickening of nails and skin of phalanges when it attacks the extremities; and subsequently absortion of the tissues, followed by ulceration and loss of the member. In this variety there is frequently no discolouration.

In the other variety loss of sensation is followed by absorption of the colouring matter of the skin, leaving a white surface, which gradually increases. Many of these cases, however, do not appear to progress further, but the white patches remain unaltered to extreme old age.—(*Dr. Wylie.*)

The different forms of leprosy appear to me to be the varieties of the same common disease, juzam, the blood being in all deteriorated; the proportion of its albuminous materials is largely increased, while that of its red particles is notably diminished. I have observed that though in some of these forms of leprosy the sensibility of the skin may be exalted, yet, in the great majority of cases, and at some period

of the disease, complete loss of all sensation constitutes a prominent symptom of the malady.—(*Nund Coomar Mitter.*)

Allighur.—Leprosy exists in the district of Allighur, but not to any great extent. It is generally seen in two varieties, which are known by the natives as pucca and kutcha korh. The former appears to be caused by a diminution of the natural pigment of the skin, which produces patches of a glistening white colour. The latter is always attended with ulceration, and the discharge of a thin liquid from the parts affected.

Bareilly, Rohilkund.—There are a number of lepers in this city and district. The disease appears to be of two kinds, viz. :—

Tubercular leprosy :—these are dusky, dark tubercules of various sizes on the face, ears, and extremities; they are irregular, and have a shiny, greasy appearance; they are occasionally insensible, but sometimes the sensibility is increased; the face is often deformed; the superciliary ridges are swollen; the hair of the eyebrows and eyelids is lost; the ears enlarged and deformed; the nose altered and disfigured; the nostrils dilated; the voice hoarse and nasal; after a time these tubercles soften, burst, and discharge matter, which drives up and forms dark scabs; the fingers and toes often ulcerate and fall off.

White leprosy—this appears first on the face, hands, legs, and arms, in white, smooth, patches; the affected surface is not itchy, swollen, or painful, but the toes and fingers are sometimes benumbed; in others they are stiff and shiny; sometimes ulcers form on them, and they ultimately sphacelate and fall off.

Ulcers also form on the alæ nasi, discharge viscid matter, and cause caries of the bones. There is rotundity of the eyebrows and ears. As the disease advances it often terminates in tubercular leprosy. In fact, the two forms of the disease appear sometimes to pass into each other. Want of feeling or sensation is not a prominent phenomenon, but a few complained of it.

Mussoorie.—Leprosy is known amongst the hills and valleys surrounding Mussooric,* but as far as my experience and information go, it is both far more uncommon and exists in a much milder form than at lower elevations of the British territory, say from the sea level to 2,000 feet.

The only form that has come under my notice at Mussoorie is that known as lepra tuberculosa. This attacks either the face or the upper or lower extremities.

Commencing with erythematous patches, followed by the appearance of shining livid tubercles of variable size and irregular shape (these are more apparent on the face than in the extremities), the skin becomes thickened, tumid, rugous, and cracked: its sensibility at first increased, eventually becomes diminished, at last is almost absent; the beard and eyebrows fall off; the ears, indurated, hypertrophied, and studded with tubercles, add much to the hideous appearance of the ridged and tuberculated forehead and face.

The white, hard, and horny palms or soles become deeply fissured; the swollen fingers or toes are almost inflexible; the nails are deeply indented with longitudinal furrows, and are much thickened; their lower surface is incrusted with a furfuraceous deposit; the voice is harsh and hoarse.

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* The following information concerning Mussoorie may be acceptable :—

Mussoorie { Latitude - - 30½°
Longitude - - 78°

Situated on the outer range of the Himalayas, which rise at this point almost abruptly from the plains to a height of from 6,000 feet to 8,000 feet; the succeeding ranges are about 10,000 feet, with a deep intervening valley.

The snowy range is some 75 miles distant; the highest point visible about 29,000 feet; the perpetual snow line on southern aspect about 17,000 feet.

Both the Mussoorie and the succeeding ranges are remarkably steep and ridgy in their conformation, consisting of compact limestone, alternating with beds of soft slate and clay.

European population fluctuates much: last year (1862) between April and October it averaged about 1,300; between November and March, 250.

Native population is very numerous, but I am unable to give any idea of the number.

It consists of two classes, *viz.*, native servants from the plains; natives from the surrounding hills and valleys. These latter born and reared at an elevation of from 3,000 feet to 15,000 feet.

Average rain-fall - - - - -		90 Inches.
Average snow-fall - - - - -		18 „
Average temperature between 6 A.M. and 6 P.M. for the whole year.	Maxima -	65° 5′
	Minima -	45° 1′
Average temperature of November, December, January, and February	At sunrise -	41°
	At 4 P.M. -	46°

Dehra.—Leprosy is met with in the district of Dehra Dhoon.

It is much more frequently met with in the hilly regions of this district than in the valley of the Dhoon itself. Residence in the dry summits of the hills does not afford a greater immunity from the disease than living in the valleys, so that one must look to the sanitary condition of the dwellings and the habits of the people inhabiting them for both the predisposing and exciting causes of the disease

Scharunpore.—Leprosy is well known, and consequently rather a common disease in the district of Scharunpore.* It is met with in the following forms :—

1st.—Scaly leprosy.
2nd.—In circular elevated patches in different parts of the body.
3rd.—White leprosy.
4th.—Tuberculated, but seldom met with.

The second and third forms are thus described :

The second variety presents itself in the form of distinctly circular elevated patches, with well-defined margins on different parts of the body. These patches have a reddish appearance, and when they attack the forehead, nose, lips, and ears, produce considerable œdema of the parts around. This appears to constitute the second stage of the complaint. The third stage is ushered in by ulceration, which generally commences on the sole of the foot, and between the toes and fingers, leading to separation of the parts of the small joints. The ulceration seldom extends to the ancle or wrist joints.

The white spots of the third variety are of a silvery hue, rather depressed than elevated, appear on any part of the body, vary in size from that of a pea to the palm of the hand; often coalesce, retaining at the same time their crescentic form, and are unattended by any uneasiness.

Roorkee.—Leprosy is known in this neighbourhood, but is not so prevalent as in many parts of India.

Sreenuggur, Gurhwal.—Leprosy is known in the district of Gurhwal in two forms, the tubercular, which is the most common, and the anæsthetic.

In the tubercular form there is development in the skin and in the mucous membrane of the mouth, fauces, and nares of erythematous patches, patches of discolouration or maculæ, and tubercles. The erythematous patches are at first of a red or purplish hue, of various sizes, and generally round or oval, most deeply coloured in the centre, and fading towards the circumference. After the existence of the patches for some time, the redness of the centre subsides, and gives place to a brownish stain, while the circumference spreads for a short distance, and forms a ring with a well-defined border; later still, the redness disappears entirely, and leaves behind it a brownish stain, which is more or less permanent. Sometimes the central portion of the patch becomes bleached and quite white and smooth. The centre of the erythematous patches is harder to the touch than the surrounding skin; the epidermis frequently desquamates over it; the tissues of the skin become thickened and more and more condensed and elevated above the surrounding skin, sometimes remaining flat, sometimes attaining by continued thickening the form of a tubercle. The tubercles present the dull red and purplish hue of the erythematous patches for some time, but sooner or later assume the brownish tint of the discoloured skin, or become whitish; the tubercles remain unchanged for a considerable time, or become inflamed, soften, and ulcerate, giving out an ichorous discharge; those in the fingers, toes, and tip of the nose ulcerate early. The discharge from the ulcers, especially from those near the joints, sometimes concretes over the surfaces of the ulcers, and forms thick crusts like those of rupia; at other times, principally in the hands and feet, the ulcers remain open, become deep and excavated, are bordered by irregular prominent edges, and secrete an abundant ichorous fluid; the conjunctivæ become conjested, thickened, and form an elevated ring round the cornea, which becomes opaque. Advanced cases, in which the eyes have been destroyed by softening of tubercles in the conjunctivæ, have not been seen here, the patients generally dying from constitutional irritation before that process commences. The schneiderian membrane undergoes corresponding changes; the nasal passages are obstructed by the thickening and swelling of the lining membrane, and broken up by softening and ulceration; the nasal bones

* The district of Seharunpore lies at the foot of the Sewalik range of hills, in latitude 30° north, and about 1,000 feet from the level of the sea. It is watered by numerous rivers, which spring from the hills, and which often flood the country in the rains. The Eastern Jumna and Ganges Canals also pass through it. Parts of it are covered with jungle, especially towards the hills. It is decidedly damp and very malarious.

become denuded, and the nose gets flattened and distorted. The mucous membrane of the mouth and fauces exhibits congested patches and ulceration; the voice becomes hoarse from thickening of the lining membrane of the larynx.

In the hands the nails become thick, rough and discoloured, and the fingers more or less numb; the numbness also exists in different other parts of the body.

The anæsthetic form is not common; it is chiefly seen in those who are not aborigines of the place, but have come from other places, and taken residence here. Insensibility and atrophy are the distinguishing features in this form of leprosy. The skin of the patient becomes pale and shrunken, countenance anxious, and there is insensibility in different parts of the body, especially in the extremities; the fingers are numb, and there is occasional flush of redness in the skin of the nose and cheeks, which assume a shrunken appearance. After a time discoloured patches appear in the different parts of the body; first, generally in the hands and back; the skin over these patches is numb; subsequently, bullæ of large size are developed suddenly, and without pain, which burst in the course of a few hours, discharging a viscid yellow fluid. The bullæ leave behind them inflamed ulcerated surfaces, the secretion from which forms a thin crust, which after a time falls, and is followed by a second, which in its turn is succeeded by others. For several years fresh and fresh crops of bullæ continue to be formed. When the ulcer heals, its place is occupied by a cicatrix, of which the skin is white, smooth, and less sensitive than the surrounding skin, and destitute of hair. The soles of the feet and the ends of the toes are the especial seats of such ulcerations.

When the disease still advances, severe pain is felt in the ends of the fingers and toes, which swell and become livid. The whole foot becomes œdematous; ulcers break out in the ends of the fingers and toes, which fall off one by one. After some time the pain ceases, the ulcers heal, and fingers and toes left shortened and distorted. But after a time similar process is repeated, and the remaining portions of the fingers and toes are expelled, and other organs are destroyed.

The two forms are varieties of one common morbid state, and not distinct diseases. In many cases there is a blending of the two forms, and the characters of both are seen in the same individual.

Almorah.—Leprosy is very common at Almorah. It occurs in the anæsthetic and the ulcerative forms. I am disposed to consider both these types as essentially belonging to the same morbid condition, but I believe that the first may exist without the other, and may not run into the second or severer form, even after a great number of years. In every form of leprosy, after a time, the mucous tissues of the mouth, nose, and fauces, often also the conjunctivæ, partake of the diseased condition of the skin. I am not aware that the natives have distinct names for different kinds of leprosy; all are known by the one appellation, korh.

Mozuffernuggur.—Leprosy is not so common in this district* as in some others in different parts of the country. It occurs here under different forms; viz., the tubercular form (juzam); the non-tubercular form or anæsthetic (soonbeharee); the leucopathie or chalky whitening of the skin, without tubercle or lesion of the sensibility (baras); and the elephantiasis or Cochin leg (filpa). There is a variety of the baras known as bohaq, in which the skin, instead of turning white, takes a red or brownish tint.

These four disorders are considered by the native medical authorities and by the people as varieties of one common morbid condition, and the manifestation of the particular form is by them attributed to the state of constitution or temperament of the individual. The propriety of this view, especially in reference to a common origin, appears at first doubtful; for, although it is true that some of the forms, as juzam, filpa, and probably soonbeharee, present in parts of their course certain generic characters, as, for instance, each at the onset having an inflammatory, acute, or subacute stage, and each in the later progress leading to peculiar changes in or disorganization of the tissues, indicative of a common cause, yet others, it is seen, as baras and the sub-species bohaq, so differ from these in general character, as, for

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* The district of Mozuffernuggur forms a portion of the northern extremity of that part of the upper division of the great Gangetic valley known as the Doab; it measures in superficial extent about 1,617 square miles, and, as lately computed, contains a population of 646,000 souls; it consists throughout of a slightly undulating plain of rich alluvial soil, dry and absorbent, interspersed with patches of sand blown into hillocks; watered by the Ganges and Jumna, and intersected by canals, it is highly cultivated, and covered by an extensive sub-tropical flora: the chief products are cattle, grain, cotton, vegetables, oils, sugar, indigo and other dye stuffs. The only manufacture is that of coarse woollen stuffs and blankets.

instance, neither, so far as known, presenting at the onset any febrile or inflammatory symptoms, or even in the after-stage leading to infiltration of the part or structural lesion, unless indeed a glossiness of surface may indicate the one and a more absorption of colouring matter the other, as to lead to the belief of a totally distinct or separate origin. It must, however, be remembered, that some of the forms, and those apparently the most opposite, as filpa and baras, are sometimes found combined in the same person, and that it is no uncommon occurrence for juzam and soonbeharee, or juzam and bohaq, to be found together. It is not improbable, therefore, that further investigation may tend to strengthen the prevailing opinion that a close affinity exists amongst the different forms of the disorder, a belief which has for a length of time been firmly established in the public mind.

Budaon.—There are about 50 lepers in the city of Budaon, which contains a population of about 26,369 inhabitants; and about 200 lepers in the whole district of Budaon, with a population of 693,627. The predisposing causes are defective sanitary state of dwellings, want of personal cleanliness, all the ordinary causes of cachexia, exposure to heat, bad diet, especially an excess of fish, beef, and treacle, syphilis and sexual excess, hereditary transmission.

Interrogatory II.

Benares.—Generally in the middle period of life and in advanced age; seldom in childhood. Earliest symptoms are burning in the skin, feeling of insects creeping on the part, and numbness of the affected part.—(*Dr. Cheke.*)

Jounpore.—The disease does not appear to be confined to any particular age in its manifestation.

The earliest symptoms the patients describe are a tingling and itching of the skin, followed by numbness, increasing to loss of sensation, and inability to feel a pinch or even a prick; a stuffed-up sensation in the nose similar to that experienced from a bad cold, the nose itself after a time becoming depressed and flattened. On examination patches of eruption are manifest, which become more or less developed; and in the black leprosy (Form No. 3), a hard, cracked, and fissured appearance of the skin of the fingers and toes; a shrivelling and falling away of the nails; a flexed position (as of clutching) of the fingers and toes, and inability to extend them, followed by ulceration, sloughing, and total loss of them.

Allahabad.—The tubercular and anæsthetic forms generally appear between puberty and middle age, but the white form is not uncommon in childhood. The earliest symptoms in the tubercular form are slight discolouration and thickening of the skin of the cheeks, nose, and ears, and loss of sensation in some small portion of skin in the anæsthetic form. White leprosy at its commencement has somewhat the appearance of common ringworm, then the epidermis falls off in thin minute scales, leaving the skin beneath of a snowy whiteness.—(*Dr. Cockburn.*)

Cawnpore.—In a well-marked case it is generally ushered in by an erythematous state of the face and extremities, accompanied with a burning sensation of the whole body. This is succeeded by more or less discolouration and numbness, with puffiness and tuberculous swelling in the parts affected, especially the alæ of the nose and the lobes of the ears. As the disease advances the swelling increases, the suppuration or abrasion takes place; dissolution of the skin will take place from the slightest injuries, such as taking up a bit of charcoal or chillum, or the slightest blow; injuries are the more likely to occur from the loss of sensation.

Agra.—It rarely appears before puberty. The earliest symptoms are loss of sensation of some part of the body, generally the extremities. Muscular action often continues beyond the point where sensation ceases.—(*Dr. Murray.*)

The symptoms usually observable in the early age are as follows:—Appearance of eruption in patches of various tint and elevation; sensation increased or diminished; shining and glossy appearance of the face; swelling and thickness of the lobes of the ears and the alæ of the nose. Weakness of the muscles, especially that of the hands and feet.—(*Meer Ushruff Ally.*)

Jhansi.—The following is the history of a case of tubercular leprosy:—Dhamoodhah, Decannee Pundit, aged 41. Eight years ago he perceived a numbness in his hands and feet; there was not much change for two years, except the fingers becoming

cramped and bent; then the nails began to fall off, first from the hands then from the feet. Soon tubercles appeared on his face and on the lobes of his ears; his features became changed from caries of the bones and consequent falling in of the nose; distressing anæmia has existed for some time. Several of the end joints of his fingers and toes have fallen off, leaving open sores; he has large sores on his knuckles, also on his elbows and knees; he has no feeling in his arms from the elbows, nor in his legs from the knees; he has felt no wish for sexual intercourse for two years; he had syphilis in 1847, but does not attribute the leprosy to it in any way; he can bear no heat of the sun, and during the day is continually pouring cold water over himself; his eyesight is very bad; he does not sleep well, and has very little appetite.

Meerut.—The age for development of the disease varies greatly, but I have not myself seen any case in which it occurred before adolescence, say 16 years of age.

The invariable symptom first complained of by patients labouring under this disease is the loss of sensation in the skin. This condition they call sun (senseless).

(*Dr. Wylie.*)

Dehra.—The patient's chief complaint at the onset of the disease is of general uneasiness; a feeling as of small insects creeping over his skin, and complete or partial anæsthesia of the parts affected; and the skin wears a rough appearance, and is often shiny.

Sreenuggur.—The disease generally manifests itself after puberty. The earliest symptons observable are a feeling of langour, lassitude, and indisposition by the patient to any exertion; depression of spirits; a sensation that worms are creeping over the different parts of the body, and of burning in the palms of the hands and soles of the feet. Formication and burning of the palms of the hands and soles of the feet are the earliest symptoms, and in many cases harass the patients for a considerable time before the true nature of the disease becomes manifest. These latter two symptoms are very prominent in the anæsthetic form and slight in the tubercular. Numbness of the fingers and a sensation of coldness in the extremities, when the disease has made some progress, are often complained of.

Mozuffernuggur.—Tubercular leprosy commences with inflammatory or febrile symptoms, and affects chiefly the face, hands, and feet. At first there is general swelling in the part, accompanied by spots of discolouration or dark shining patches, which are followed by more or less tubercular thickening of the skin. As the swelling subsides the part becomes studded with small permanent nodules, seen mostly in greatest number on the alæ of the nose, the external ears, and the extreme phalanges of the fingers or toes; after a time the cuticle dries or hardens, and cracks into scales, which in places fall off, leaving the part tender or perhaps covered with excoriations. The nervous sensibility is heightened at the onset, but subsequently diminished,

In the anæsthetic form of the disease, the prevailing symptoms are often obscure, though there is sometimes noticed a degree of constitutional irritability, followed by a glossiness or redness of the surface and other indications of increased vascular action.

In many instances, however, it appears difficult to fix on any precise time at which the disease may be said to have first made its appearance. No pustules or tubercles form on the part, but as the irritability and redness subside the cuticle cracks into small bran-like scales, which soon desquamate, and leave the skin hard, rough, and fissured.

Interrogatory III.

Benares.—This varies according to the form of leprosy. The disease is developed in the first and second forms in from three to eight years, and proves fatal in from twelve to thirty years; the third form, or whitening of the skin, is not a fatal disease.

(*Dr. Dunbar.*)

Goruckpore.—The disease, usually commencing about middle age, goes on increasing, and I believe usually proves fatal towards the natural decline of life,—about the age of 50. In some cases it is much more rapid; and in others I have known it has gone on for 20 years and more, making almost imperceptible progress.

There is now a man in the Dispensary Hospital, about 50 years, who has had leprosy for 20 years; the greater part of both feet have fallen off, and his hands and fingers contracted and more or less covered with white cicatrices. The disease has not advanced for five years; and I have lately extracted cataract from one of his eyes, and the wound in the cornea healed rapidly and well.

Cawnpore.—It is very seldom in itself attended by fatal results, but it commonly induces a predisposition to other diseases, such as dysentery, diarrhœa, low fevers,

atrophy, &c., from which the patient generally dies. Lepers seldom live beyond 45 or 50.

Etawah.—I am not certain at what time it proves fatal, but I have known both Europeans and Natives live up to the age of 60.

1st. A Dutchman, who had been nearly all his life in India. In this individual the ulcerated form was fully developed, and he lived up to the advanced age of 60 years.

2nd. An Englishman, in whom the disease was partially developed, lived up to 52. This individual had been many years in India, had a numerous family, in all of whom the hereditary taint was more or less developed.

3rd. I have known numerous natives of India live beyond 50, suffering from the worst form of leprosy.

Agra.—The disease is slow in its progress, lasting for many years, gradually getting worse for 10 or 12 years, whilst the fatal termination is generally caused by the supervention of dysentery or diarrhœa.—(*Dr. Murray.*)

Banda.—In cases of leprosy following syphilis, I believe the disease runs its course with great rapidity.

Leprosy, when not connected with syphilis, does not appear to shorten life very materially.

Roorkee.—The disease usually attains its fullest development at about the 35th or 40th year, and a leper does not usually attain to more than 50 years of age, unless he emigrates to the cooler climate of the hills, where I am told they live to a good age.

Sreenuggur.—No good data upon which to answer this question; but it will be nearly true to say that between 30 or 40 years of age is the period of life at which the disease of the tubercular form attains its full development, and within two or three years; and between 30 and 50 is the period of life at which the anæsthetic form attains its full development, within five or six years; and in those periods of life, after the duration of the disease of about 10 years and 20 years respectively of the two forms, that it usually proves fatal.

Mozuffernuggur.—The result of an extensive enquiry under this head seems to show that dissolution rarely happens until after the disease has existed for some years, and the sufferer has passed the period of middle life. It appears also that the persons affected are, as a rule, carried off, not by the leprosy itself, but by the intervention of some secondary cause, chiefly diarrhœa and dysentery; and this coincides with what was observed in the Mozuffernuggur poor-house during the famine in 1860–61, at which time the lepers throughout the district, with other distressed persons, were collected together and fed by public charity for many months. On this occasion many of the lepers died from diseases of the bowels, and a few from cholera, but none appeared to sink from what might be termed the direct effects of the disease itself.

Interrogatory IV.

Benares.—In the six reports sent in by the civil surgeons in the Benares circle, all agree in stating that it is more common in the male sex; and Dr. Garden gives some statistics, but they are not to be relied on, as females can and do conceal the disease, and are themselves prevented from appearing in public when belonging to any but the lowest castes and poorer classes.—(*Dr. Dunbar.*)

Cawnpore.—The disease appears to be pretty equally distributed between both sexes. Some authorities say that women are more frequently attacked on account of the greater coldness of their blood. Where poverty much abounds the women are poorly nourished, and hence may, under these circumstances, become more frequently victims to the disease.

Furruckabad.—Men appear to be much more frequently afflicted with leprosy in this district. From the returns of lepers furnished by the police, which are believed to be correct, it would seem that it is almost the exception for a woman to have the disease. Of 418 confirmed lepers, only 17 were females. It is necessary, however, to add, that the proportion of women to men in the district is in the ratio of 16 to 19.

Agra.—The greater number of cases are in men, but the proportion is not known. (*Dr. Murray.*)

Meerut.—In the province of Kumaon Dr. Morton mentions that the last census was taken in 1853, when at that period there was a population of, males 193,691,

females 173,632, total inhabitants 367,323; of whom were lepers, males 1,332, and females 378. The disproportion of infected between the sexes being very marked, I am inclined to believe that the females are under estimated, as from Dr. Adams's table of patients admitted into the Leper Asylum at Funchal, Madeira, from 1802 to 1803, it appears that during that interval 526 were males and 373 females. But assuming that the total number of lepers in the province of Kumaon be approximatively given, it is at once obvious that lepers must be more numerous in the Himalayas than in the plains, which by general rumour appears to be an undoubted fact.—(*Dr. Wilkie.*)

Interrogatory V.

Benares.—Dr. Cheke states that he has seen cases in Europeans, but none of the other observers have, nor have I.

Dr. Garden has seen one marked case in an Eurasian. Dr. Cheke says in a general way he has seen cases in Eurasians, but none of the others have.

I have seen leprosy only among natives.—(*Dr. Dunbar.*)

Goruckpore.—It appear to affect Hindoos and Mahomedans almost equally, but is found chiefly amongst the lower and poorer classes. It occurs both among high caste men who eat only vegetables, among those who eat meat, and among the low caste men who eat anything. I understand that there are three Mahajuns in the city who eat no animal food now suffering from the disease.

Cawnpore.—I think more frequent among Mahomedans than Hindoos. It is much more common among the very poor, but the richest do not escape; one of the reigning rajahs has it now. It appears never to occur amongst Europeans in this country. The sub-assistant surgeon at this station informs me that he has met with it in Eurasians, but it is very rare in any but the black population.

Etawah.—I have seen the disease more frequent amongst the natives of India. I shall here enumerate the number of well-known cases I have seen in the European, the half-blood, and the native.

1st. I. I., three brothers, all lepers of the ulcerative form; children all diseased; wives free (half-blood).

2nd. J. W. C., a man; no ulceration. A numerous family, all tainted with leprosy (European).

3rd.—Harrach, a Dutchman; the ulcerated form; no family; wife free from the disease.

4th.—G. C., a native family of four brothers, three of whom had the ulcerated form of the disease; one brother free. A numerous family of boys; all look pale and strumous.

5th. Gungadhur, late Rajah of Jhansi; ulcerated form; said to be hereditary; no children; his wife, the famous Ranee of Jhansi, was free from the disease.

Agra.—The disease is more frequent among Hindoos than Mussulmen; the relative proportion is fifteen to one.—(*Meer Ushruff Ally.*)

Seharunpore.—I have never seen or heard of the disease of leprosy in a European or Anglo-Indian in this district. It mostly attacks the lowest orders of Mussulmans, especially artizans, who have much to do with mercury in its various forms. The poorer classes of Hindoos are not exempt from the disease, but it is far less common with them than with the first mentioned.

Almorah.—I have never heard of the disease amongst the European or Eurasian class, nor can I at this moment recall any instance of a Mussulman leper. As a rule, the Mussulman eats meat and lives better than the Hindoo.

Interrogatory VI.

Benares.—None of the reporters have any means of giving precise answers to this interrogatory. Leprosy does not seem to be confined to any one locality more than another. The dwellings of the natives are all equally wanting in sanitation; the poorer classes are generally more dirty. But leprosy seems to be affected more by the diet and mode of living than by any other cause; but, nevertheless, men in good circumstances, able to afford not only the necessaries but also the luxuries of life, become affected with leprosy. These have, however, most generally the disease in its 3rd form. —(*Dr. Dunbar.*)

This disease exists most among the poor ill-fed classes, but also among the rich; and in these cases I believe a venereal taint is the primary cause.—(*Dr. Cheke.*)

Ghazeepore.—From the statement appended to this report, in which the numbers of lepers of each caste are given, it would appear that all alike are equally liable to the disease, from the highest to the lowest. But on this point I cannot speak decidedly, as I can obtain no return of the numbers of each caste in the district, and without that no exact comparison can be made. The largest number of lepers occur in those castes that are most numerous.

Allahabad.—*a.* As far as my experience goes, I am not aware that climate or locality have anything to do with the prevalence or otherwise of the disease (*b. c.* and *d.*), but it is generally believed and acknowledged that want of cleanliness, both in habitations and person, and bad food, favor the occurrence of the disease.

e. I am not aware that any particular occupation has such influence.—(*Dr. Cockburn.*)

Furruckabad.—I am not aware that any circumstances in particular favor the development of leprosy in individuals or groups of individuals.

Lepers are frequently met with in the neighbourhood of the Ganges; but this is principally to be attributed to the fact that the majority of Hindoos, on being attacked with the disease, forsake their homes and relatives, and betake themselves to the banks of the sacred river, where they subsist on charity, and end their lives on what they consider to be holy ground.

Mynpoorie.—*a.* In the district or colony of Mynpoorie the ulcerating disease, black leprosy (juzam) chiefly occurs in the poorer, dirtier, rural villages; the entire district is inland, almost perfectly flat, alluvial, of sandy clay, and malarial throughout its length and breadth, half covered in the rainy season with water, which gradually disappears before the next rainy season sets in.

b. The sanitary condition of the dwellings of the inhabitants is wretched in the extreme, generally throughout India surrounded by accumulations of filth; close, low, mud buildings, with scarcely any ventilation.

c. Amongst the poorer classes in which black leprosy is most common personal cleanliness is certainly at a minimum; the six colder months of the year wearing the same clothes night and day, without washing for months together, and seldom washing their persons thoroughly.

d. The ordinary diet is cereal grains and pulses ground and made into unleavened cakes, and eaten with a little clarified butter, or with vegetable curried stuffs, or sometimes with fish, one meal a day sufficing.

e. Field labour, grinding and preparing grain, working at sugar and oil mills.

Banda.—I believe the disease is not at all confined to poverty, for I have heard of several Rajahs and Newabs who are sufferers from it; but the disease is decidedly more frequent amongst those who are exposed in their work to most heat. I do not think locality (excepting places where great heat and dryness of atmosphere prevail) has much to do with it. Banda is a notoriously dry and hot climate, volcanic, and I believe on this account, and its dust, that leprosy is of so frequent occurrence.

Judging from the dirtiness of the natives generally, and their women in particular, one would say that the women should suffer most, which is not the case. The general food of natives is atta, flour of wheat, or bajra, or jowar, with rice at times. The different dâls or pulses are universally eaten, and meat is more plentiful here than at many places, besides deer and game, which abound. I believe that the flour of bajra and also of jowar is very heating; mussoor-ka-dâl has also the character of being heating, and without doubt meat and fish increase the pain in leprosy, producing a tingling hot feeling in the extremities; but whether such food causes the disease I cannot say.

Jhansi.—The higher castes of natives, the Brahmins and Pundits, appear in Jhansi to be more subject to both forms of the disease than the lower. These classes or castes of natives seldom have any employment, except taking care of the numerous tombs and other places of religious worship; they are for the most part situated on the banks of the numerous tanks of stagnant water in or around the city. Their habits are extremely cleanly; their ordinary diet is confined to farinaceous food; their dwellings are in general more cleanly than those of other classes of natives.

Meerut.—In the lower classes of society it is very frequently observable, particularly in those who are accustomed to eat putrid fish and meat, and other unwholesome food, &c. &c. Inhabitants of low and damp localities are more subject to the disease; and other circumstances, such as dirty habits of life, living in low, dark, and ill-ventilated huts, &c., accelerate the development of the disease.—(*Nund Coomar Mitter.*)

Mussoorie.—I have seen a great deal of the Beloochees, Wuzeerees, Affghan, and other Pathan tribes, besides Ghoorkas and other Hindoo tribes. All these northern people are notoriously dirty, compared with the inhabitants of the southern portion of India; yet leprosy of either form is far more common among the latter.

Dehra.—The dwellings of the natives in the hilly regions of the district of Dehra Dhoon are of the most wretched description; they are truly hovels, more fitted for wild beasts than for men. One wretched room of paltry dimensions suffices for a family; a low and narrow door is the only means of entrance and exit, and the only source of ventilation; the roof is low. The air in these huts is never purified; and on entering one of them the foulness and fœtidness of the atmosphere is stifling and oppressive. Outside the huts is a collection of every species of filth.

The inhabitants are extremely dirty. They scrupulously avoid the use of water. Their hair and bodies are covered with vermin; and numbers of them sleep and eat in the same vitiated atmosphere.

Their diet is simple, and consists chiefly of the cheap cereal grains; but they smoke to excess, and use the commonest varieties of tobacco.

Their habits are idle in the extreme; they are only driven to employment by the necessities of nature, and they spend the greater portion of their time in warming themselves seated round a fire exposing to its influence their hands, feet and faces, and to this habit I attribute in a great measure the prevalence of leprosy.

As a rule, the disease is chiefly confined to the lower orders or poorer classes of the community. Cases occur now and then among those better off in the world, and where it seems to be derived from an hereditary taint; they are not, however, very common.

Seharunpore.—The dwellings of the population at large are of a most wretched description. The towns are still worse than the villages. Any one in the habit of threading their narrow, confined streets, and inhaling the peculiar nauseating effluvia emanating from them, must wonder how it comes to pass that the people are not extinguished altogether by plague and zymotic diseases of every kind. The state of native dwellings is a vastly important one, well worthy of the earnest attention and consideration of Government. From the want of energetic and systematic sanitary arrangements spring, I believe, those frequent and violent epidemics so peculiar to eastern countries.

The inhabitants wear the same clothes day and night, and wear them too till they drop off from sheer age. During the hot months they require but little covering; not so, however, when the temperature falls to near freezing point. They may then be seen going about shaking in every limb, and, as a natural consequence, they suffer from rheumatism, bowel and pulmonary complaints.

Mozuffernuggur.—Debility, in whatever form or however induced, tends to promote its accession. The chief predisposing cause is no doubt hereditary taint; but other states of body, as an infirm constitution, or a condition of system similar to that which favours the spread of scrofula, will also promote the ravages of this disorder.

The houses of the poor have an appearance of wretchedness and poverty, being nothing more than low huts, built with mud, and roofed with light bamboos and dried grass. No attempt is made at ventilation or the admission of light beyond an opening in the wall, which serves the purpose of a door. Nor is drainage in any way attended to; the refuse matters with the surplus rainfall find their way to the lowest point, and there collect and stagnate.

Budaon.—In this district it is most common among the Mussulmans, the latter circumstance appearing to depend upon their dirtier habits, and their eating more beef and fish than the Hindoos.

Interrogatory VII.

Benares.—The disease seems to advance more rapidly under the influence of bad food and poverty, owing to which the sufferers are exposed to extremes of temperature. This is, however, more a matter of opinion than of observation.—(*Dr. Dunbar.*)

Furruckabad.—It would appear that poor living, a fish diet, want of cleanliness, insufficient clothing, and exposure to the heat of the sun, accelerate and aggravate the disease when once formed.

Agra.—The same conditions which seem to favour the disease also accelerate or aggravate it when it has once appeared.—(*Mokund Lall.*)

Poverty and want of wholesome food, intemperance, debauchery, and want of cleanliness aggravate the disease.—(*Dr. Murray.*)

The following are the conditions or circumstances of life which seem to accelerate or aggravate the disease when it has once manifested itself in an individual:—

a. Exposure to heat.

b. The use of the following articles of diet:—oil, chillies, molasses, acids, a kind of dâl called arurh, plant mathee (مینھی) called Trigonella fœnum græcum.

c. Excessive venery.

d. Want of nourishing food and clothing.—(*Meer Ushruff Ally*).

Jaloun.—I am informed that the subjects of this disease eschew saccharine and oleaginous articles of diet; they also take as little salt or flesh with their food as possible, for they have learned from experience that these aggravate the disorder.

Sreenuggur.—Poverty, want of comfort of a fixed habitation, dejection of spirits, caused by being compelled to separate from the family, and excommuniated from society; irregular diet, and certain articles of it on which the sufferers are frequently compelled to live; crowding of leprous persons together in one place where a number take refuge, and which is not kept clean nor well sheltered from cold, rain, and weather; uncleanness of the bodies of the sufferers themselves; all these seem to aggravate the disease when it has once manifested itself in an individual.

Ajmere.—Poverty and filth aggravate the disease, so also do intemperance and debauchery. Patients are always worse in the hot weather.

Interrogatory VIII.

Benares.—All the reporters but Dr. Dale consider the disease to be hereditary; the natives believe it to be so; still there are but few instances in which more than one member of a family is attacked with leprosy.—(*Dr. Dunbar.*)

Mirzapore.—The disease appears to be rarely hereditary. Of 32 cases of which accurate notes were taken on the various points noticed in the interrogatories, I find three are hereditary; in two the father, and in one the grandfather, was affected; and in one case, the disease, phool, (the leucopathic variety,) had descended to the son, who is however now well: this is about one in eleven hereditary.

Ghazeepore.—The disease is undoubtedly hereditary in many instances.

The general feeling too of the population is that it is hereditary, and on that account its existence is a bar to intermarriages.

On the other hand, nothing is commoner than to find one member alone of a family affected.

Agra.—The disease is generally hereditary, but all the members of the family are not always attacked.—(*Dr. Murray.*)

Banda.—The disease is generally allowed to be hereditary, although instances have occurred where both parents being lepers still the children escaped; again, in a family of four to five children one or two may have leprosy, the remainder escaping.

Meerut.—Although I have not met with any such instance, yet it is the general opinion that it is a hereditary complaint. I have known, however, several instances in which one member only of a family, has been affected with leprosy while all the rest of the same family remained perfectly free from any trace of it.—(*Nund Coomar Mitter.*)

Seharunpore.—The belief in its hereditary transmission was so deeply grounded in the minds of the Punjaubees generally, that they were in the habit of burying alive, not only the leper himself, but also his relations and friends, lest in multiplying their kind the disease would be communicated to distant generations. This practice has since been checked by Government interference.

Almorah.—In the cases where I have made inquiry I cannot distinctly trace any hereditary tendency. In the majority of cases in the leper asylum at Almorah, the leper is one member only of a family so afflicted, and they speak of having brothers and sisters in perfect health, who have apparently not a taint of the disease. There are two young children at this moment in the leper asylum, born of leprous mothers since their admission, who have perfectly clean, healthy skins, and who look as healthy, fat, and chubby as children outside; but whether the disease in them will develope

itself as they reach the age of puberty, I cannot say. These mothers were admitted pregnant.

Bijnour.—Leprosy would appear to be strongly hereditary. At the same time I have had the particulars of 14 cases given me in which only one member of a family had the disease.

Interrogatory IX.

Benares.— In my opinion there is no connexion between leprosy and any other disease.—(*Dr. Dunbar.*)

Jounpore.—Not necessarily, though in some cases it seems connected with syphilis, or to proceed from a syphilitic taint.

Cawnpore.—Leprosy is unconnected with any other disease.—(*Dr. Guise.*)
There is a diversity of opinion as to its connexion with syphilis. My sub-assistant surgeon, who has seen a great many cases, states that there is no connexion with syphilis or any other disease known in this country; but he has known it to follow the excessive use of mercury, either for venereal or other diseases. The native doctors state that it does follow syphilis, and I believe that it is more likely tooccur in syphilitic people if there should be any predisposition.—(*Dr. Jones.*)

Mynpoorie,—I do not think it is connected with syphilis or dependent on syphilis. Many cases of most severe forms of syphilis occur amongst the natives without being followed by black leprosy, such as loss of nasal bones and hard palate, nodes, and various eruptions on the skin. I have never seen a leper in whom undeniable marks of previous syphilitic disease were left; yet the native hakeems believe that the disease has its fons et origo in syphilis, and assert that it never occurs in a man of middle age unless he has previously at some time or other contracted syphilis, except in the rare case of a man attaining middle age whose parent or parents suffered from the disease without previously showing it.

Agra.—I have reason to believe that syphilis generally acts as an exciting cause of the disease, especially when there is an existence of hereditary predisposition.

Almorah.—The natives themselves believe leprosy to depend very often on a syphilitic taint, but I am disposed to think this altogether a mistake. No doubt, with a predisposition to leprosy already existing, if a person's constitution becomes tainted with syphilis, this, like any other lowering cause, may develope the other disease, but I think the morbific cause in each is quite distinct. The natives sometimes consider symptoms which have externally some resemblance to leprosy as leprous which in reality are true secondary and tertiary syphilitic symptoms. Affections of the mouth and throat and nasal passages, loss of voice, &c., are common to both diseases, but those which depend on a syphilitic cause are almost always easily distinguishable from the true leprous affections.

Mozuffernuggur.—There is no reason to believe so.
The presence of a depressed state of the powers of the body, whether originating in age, want, or disease, is believed to be one of the chief circumstances under which an undue influence is excited on the progress of the disease. But the ingress of other specific affections after the leprous disorder has manifested itself, even though their leading features may not be well marked, such as idiopathic fever, inflammatory attacks, disorders of the alimentary canal, the strumous diathesis, and in women anæmia and nervous disorders, seem to accelerate its course.

Interrogatory X.

Benares.—All the reporters agree in stating that leprosy is not contagious, nor transmissible by sexual intercourse.—(*Dr. Dunbar.*)

Cawnpore.—I have met with none, nor has the sub-assistant surgeon, but the native doctors say it is contagious in the suppurative stage. The hospital servants as well as the sub-assistant surgeon constantly handle these cases in the ulcerative stage, and they have never become affected.

Etawah.—I have never known the disease to be contagious, either by proximity or cohabitation.

I have known several male lepers married to healthy fine women. They have lived and cohabited together for years, have had a numerous family, and still the disease has never been communicated, although the children were tainted.

Agra.—It is the popular impression that the disease is contagious; it appears in the families of leper, though a leper's wife does not always get the disease. It is supposed to be the ulcerative stage that is contagious.—(*Dr. Murray.*)

Banda.—The disease amongst the natives is not considered contagious. There are many lepers, wealthy men, who have servants to wash and dress the ulcers once or twice daily, and are in constant attendance on them. These men keep free from the disease: I made strict inquiry, and find the report correct. From another report I gather that, when the disease is fully established, when there is ulceration with profuse discharge, persons have become leprous from contagion; but I could not procure any decided information on this point.

Meerut.—It is certainly a contagious affection. I have seen, however, lepers living as usual with their families in the same house to the end of their lives without infecting any one.—(*Nund Coomar Mitter.*)

Seharunpore.—No case has ever come to my knowledge, neither have I been able to ascertain from inquiry, of an instance of the disease having been communicated to a healthy person by contact. Lepers have remained with and been attended by other members of the family without communicating the disease.

Sexual intercourse is no doubt a fertile source of transmission, either the male or female suffering from disease at the time, even in a modified form.

Budaon.—I have met with instances in which the disease proved to be contagious after living in close proximity to the diseased person for a long period of time, say one or two years.

a. The malady was in full vigour, and there were ulcerations with a discharge.

b. In my description of a case of daulassad or tubercular leprosy (see my detail of cases) such an instance of contagion is related.

c. The disease is transmissible by sexual intercourse from a man to his wife, when the former is in an advanced stage of disease.

The evidence in the case alluded to under *b.* is merely the statement of the patient that his brother, ætat. 16, who lives with him, constantly sleeping in the same bed and eating from the same dish, is commencing to be affected with leprosy.

Interrogatory XI.

Benares.—Lepers are under no legal but only social restriction, and this is confined to cooking and eating and personal contact; not to common intercourse; nor are lepers ejected from their homes.—(*Dr. Dunbar.*)

Mynpoorie.—The only restriction kept in force amongst the native population by their own rules is that the leper keeps his own drinking and feeding utensils and clothes to himself. He is not allowed to drink or eat out of the same vessel with sound people.

Agra.—There is no segregation enforced; they are allowed to wander about and beg, but they are avoided by the community.—(*Dr. Murray.*)

Jhansi.—Persons affected with the tubercular form of leprosy are put out of caste, as it is called, as soon as the disease has manifested itself decidedly.

No one, not even of their family, will eat any food they have touched or drink from any vessel with them; they will not smoke with them. In general, a small separate room is assigned to the leper, and his food is given to him there. If a man's wife eats with him she is also put out of caste.

Seharunpore.—In this district lepers are certainly avoided by the community at large, that is, they are not permitted to hold free communication or to keep close company with the public. They herd by themselves at night, and are scattered during the day begging. This social restriction is based upon Hindoo physiology, which holds a leper to be an unclean person, and teaches people to avoid even the touch of such an one. The popular vulgar conviction among the lower orders of Mussulmans is the same as that of the Hindoos in this respect, but the better educated classes of both hold it to be nothing more than a disease, in the ordinary acceptation of the term, and their Moslem teaching is silent on this point, at least nothing is said about debarring a leper from the advantages of society.

Almorah.—They are put out of caste, and when the leprosy is unmistakably developed, they are completely segregated from their friends and relations in the village.

Mozuffernuggur.—It is the custom with the Hindoos, who form probably two thirds of the inhabitants of the district, to provide separate dwellings for those affected with leprosy; but it cannot be said that by this arrangement the affected persons are excluded from society. On the contrary, as most of them subsist by seeking alms (there being no permanent provision for their relief), they are permitted to pass from house to house, and in this way freely communicate with the rest of the community. It is common enough to see lepers in the bazars and in other places of public resort. The Mussulmans, not believing in contagion, and being, moreover, fatalists, make no attempt to put their lepers apart.

Interrogatory XII.

Benares.—There is a leper asylum at Benares. Lepers are also admitted for treatment as out and in patients in dispensaries.

The leper asylum is in connexion with the asylum for blind and destitute persons of all nations and classes founded by Rajah Kally Shunkur Ghoshaul Bahadoor. It is a flat-roofed building, divided into four compartments, and can accommodate sixteen patients; it is no wise different from other hospitals for natives. The hygienic treatment consists in providing the lepers with an abundance of good nutritious food and sufficiency of clothing, and the medicinal in distributing mudar powder, arsenic, and chaool-mogree oil.—(*Dr. Dunbar.*)

Allahabad.—There is an asylum here supported by voluntary contributions for the reception of blind, lame, lepers, and other poor persons unable from bodily infirmity to gain their living. Lepers do not in any great numbers resort to it; there are now eight or nine out of forty inmates.

Occasionally in the early stages of the disease those afflicted with it apply for treatment as out-patients at the charitable dispensaries, but those in advanced stages are never admitted into these institutions as in-patients.—(*Dr. Cockburn.*)

Agra.—There is no provision by Government for the reception of lepers in any of the stations. At Agra there is a leper asylum, supported by charitable subscription, where the poor lepers are collected. The building is in the form of a square, with fifty-nine separate quarters 9 × 12 × 16 feet each, with cook-rooms. Each gets bread made from 20 ounces of flour, 4 ounces of dâl, with vegetables once a week. They are attended by a native doctor. The other lepers receive medicine as out-patients at the Thomason Hospital and other dispensaries.—(*Dr. Murray.*)

Jaloun.—Under the native régime, a certain quarter of the town was set apart for the lodging of the leprous poor, and a certain sum was allowed for their maintenance.

Meerut.—They are admitted in the Government charitable dispensaries, but there is no separate establishment, but which, considering the contagious nature of the affection, and the way in which a man suffering from leprosy is shunned, seems to be very necessary.—(*Nund Coomar Mitter.*)

Mussoorie.—Admitted in common with other patients; and if poor fed whilst under treatment at Government expense in the charitable dispensaries.

Dehra.—There is a leper house, in which there is accommodation for 18 or 20 lepers; there is no hospital appropriated for their treatment, but this is always afforded to them at the Government charitable dispensary.

Seharunpore.—As yet no asylum had been provided in this district for lepers. There is, however, a village close to the city in which they reside, and called accordingly the "leper village." It is badly situated, close to a stagnant stream, and bordering on one of the public thoroughfares. Out of respect to the European community, there can be no doubt as to the propriety of removing it, and such ought to have been done long ago; it is, to say the least of it, an unpleasant sight for ladies passing that way to see half a dozen naked leprous bodies occupying the side of the road asking for alms.

Almorah.—There is an asylum at Almorah where about 80 lepers are accommodated; that is, lodged and fed; but they are under no medical or hygienic treatment beyond having clean lodgings and healthy food furnished to them. The asylum is supported by private charity, and was started some years ago by the present Commissioner of Kumaon, Colonel Ramsay.

Interrogatory XIII.

Benares.—The leper asylum contains an average of eight patients. They generally come when unable to go about begging, as they prefer the comparative freedom of wandering mendicants to the confinement of the asylum. They generally leave the asylum as soon as they are able to walk about without pain. There are at present 10 lepers; their ages vary from 16 to 50, and duration of disease from 4 to about 30 years. Every one has lost almost all his fingers and toes. They are all Hindoos (four Koormies, two Rajpoots, two Chamars, one Aheer, one Mullah). Only two have had syphilis, viz., the Rajpoots, and these have the disease in its most aggravated form; both had been treated years before with mercury by means of fumigation, and had been much salivated. One of these men was dying in great pain; the nose and greater part of his face had been ulcerated away; the smell from the ulcer was most offensive. He was attended by his sister, a widow, who had not a taint of lepra. One man had been about 30 years in the asylum; he had lost his fingers and toes, and eyeballs. These last appear to have undergone ulcerative disease, first of the cornea, which burst, and gave passage to the rest of the contents of the eyes. The rest of the lepers had been short periods in hospital.—(*Dr. Dunbar.*)

Cawnpore.—None strictly at the Government expense, but the Government is the chief contributor towards the public dispensary to which they are admitted. Their numbers vary; 22 were treated last year.

Agra.—The daily average for the last year, 1862, maintained in the leper asylum here (supported by charitable subscription), was about 50.—(*Dr. Murray.*)

Dehra.—From 15 to 26.

Interrogatory XIV.

Seharunpore.—On enquiry from old residents of the district, it appears that the disease has been, and is still, on the increase, and the principal cause of this is undoubtedly owing to its direct propagation from parent to offspring. Isolated cases occur where no hereditary taint can be traced, but these are comparatively rare.

Sreenuggur.—I have no reason from personal knowledge to believe that the disease has been of late years on the increase or otherwise. The people of the place entertain a notion that the disease is on the increase, because they see now-a-days leprous persons in increased numbers. Not long ago here was a custom to bury alive with some ceremony every person affected with leprosy. A father would bury his son, and a son his father; but since the English has commenced to rule the district this abominable practice has stopped. The probability, therefore, is, that persons who by the ancient custom would have been buried are now allowed to live, and the consequence is that leprosy can be seen in a number of persons at the same time.

Bijnour.—I have no personal knowledge on this point; but the disease is generally stated to have increased very much of late years, greater debauchery being assigned as the chief cause.

Budaon.—I believe the disease to have been on the increase during the last 40 years in Budaon, and that the greater prevalence of syphilis during the same period has contributed in some degree to its increase.

Interrogatory XV.

Benares.—Hygienic treatment seems most favourable in this disease; arsenic and chaool-mogree oil, &c., have benefited many cases, and good food and great cleanliness. I never heard of a spontaneous cure of this disease.—(*Dr. Cheke.*)

Azingurh.—In those who are put on good diet and treated with arsenic in the form of Fowler's solution the disease appears to be temporarily arrested.

I have not seen a case of spontaneous cure.

Allahabad.—There is no doubt that good food and improvement in hygienic conditions ameliorate the disease, *i.e.*, they promote the healing of the sores and render life more bearable to those afflicted.—(*Dr. Cockburn.*)

Cawnpore.—It can often be checked in its progress, if not cured, by medicinal treatment, and it sometimes undergoes spontaneous cure in the early stages. I have

known mudar cure it; and I have heard of its being very successfully treated by a popular Indian medicine called chaool-mogree, the seeds being eaten, and the expressed oil being applied. Iodine, internally and externally, mineral acids, arsenic, bleeding, refrigerants, and purgatives are the remedies commonly resorted to. Mudar and iodine are considered specifics, and mercury is considered to aggravate it greatly.

Etawah.—I have never known the disease to be perfectly cured. Since the year 1859 I have treated 28 cases in the city of Etawah, and out of this number two only obtained partial relief under the use of the powdered root of the mudar (calotropis gigantea, or asclepias gigantea).

Agra.—I have seen the sores heal up and the course of the disease arrested for a time, but I am not aware of any permanent cure, either from medicine or spontaneously. Mudar powder and arsenic appear the best remedies, and I thought benefit followed the application of blisters to the nape of the neck. There are no permanent cures in the leper asylum.—(*Dr. Murray.*)

Ajmere.—As far as my experience goes, leprosy does not undergo a spontaneous cure. I have seen very satisfactory results follow the administration of small doses of the bichloride of mercury. I have also given arsenic with marked benefit, but I have never witnessed any cures. An oil made from the kuddo seed is administered by the native practitioners in this part of the country, it is said with benefit.

Meerut.—I have observed considerable improvement in the general condition of the patients by placing them in favourable hygienic conditions. Good food, fresh air, sufficient clothing, moderate exercise, and the cold shower-bath certainly contribute more than anything else to ameliorate the health of leprous persons. Under these they gain flesh, their skin assumes a more healthy appearance, and their lives are in a great measure rendered more comfortable, but they never perfectly recover.

(*Nund Coomar Mitter.*)

Sreenuggur.—Residence in colder climates, cleanliness of body, ease of mind, avoidance of animal food of every kind, and restriction to nutritive unstimulating farinaceous food, have been observed to be beneficial. When a leprous person takes animal food here the disease increases within twenty-four hours, and the suffering of the person becomes very great. Medically, cod liver oil and arsenic, when there are no signs of active cutaneous inflammation, are the only medicines that have been found productive of good in the patients that attend the out-door of the Government charitable dispensary in the district for some time with perseverance. Sulphuret of arsenic, finely rubbed with some oil, and made into a linament, is a fine external application. When this is rubbed over the patches of discolouration they seem to fade, and the sensation of itching that annoys some patients is remarkably allayed by it. I have tried many mecidines which are spoken of as specifics, but without any apparent benefit. The only medicines that have been found productive of good in my hand are those that I have stated; but I have observed that when arsenic is given while there is any acute cutaneous inflammation, it is not only useless but injurious; it then seems to further the progress of the disease.

Leprosy sometimes does undergo a spontaneous cure, but partially. When there is spontaneous cure it is at the ulcerative stage, but never before that; the ulcers in such cases close, and cicatrices form over them.

Almorah.—I have never seen any good result from any kind of "medicinal" treatment, and the hygienic and dietetic give the only hope. By having good food and well-ventilated clean dwellings furnished them, persons suffering from leprosy who have not previously enjoyed these advantages do undoubtedly derive benefit; and many cases are now to be seen in the Almorah Leper Asylum where the disease has apparently been cured, or at least remained in abeyance for years past. There are two men who have been in the asylum respectively for 20 and 22 years, and one woman for 20 years. These have all the marks of old leprous ulcerations. The one who has resided there the longest, 22 years, has neither toes nor fingers, but is now apparently quite well in other respects physically, while mentally he possesses at least ordinary intelligence.

Interrogatory XVI.

Benares.—The census is taken very roughly annually in Ghazeepore; at uncertain times elsewhere.

There is no registration of births and deaths.

Dr. Garden is the only reporter of the number of cases of leprosy in the district of which he reports; they are the nearest approximation that can be had, but they must be inaccurate, as they were diagnosed by either the patients or native officers of revenue.—(*Dr. Dunbar.*)

Azimgurh.—The estimated population of this district, according to the census taken in 1862, is one million and a half.

Jounpore.—The population of the Jounpore district is estimated at (90,000) ninety thousand, and the last census was taken a month or two ago (April 1863).

Allahabad.—According to the last census taken on the 1st January 1853, the population of this district was 1,379,788.—(*Dr. Cockburn.*)

Cawnpore.—The estimated population is 100,000, according to the census taken three years ago, I believe.

Furruckabad.—The last census of this district was taken in 1851-52; the population then numbered 877,475. A new census is at present (March 1863) in course of being taken.

The number of lepers and the population are as follows:—

	Lepers.		Population.
Males - - -	401	Males - - -	475,312
Females - - -	17	Females - - -	402,163
Total lepers - -	418	Total population -	877,475

Futtehpore.—The population of the district of Futtehpore is 679,787; census was taken 1st January 1863.

Mynpoorie.—The last census was taken in 1844.

The city of Mynpoorie is supposed now to contain about 33,000 inhabitants, and the entire district or colony about 500,000.

Agra.—In the Furruckabad district, during the famine year of 1860, I think I saw about 100 lepers altogether. The population of the district is, I believe, calculated at 100,000.

In the Agra Central Prison there are at this moment 2,500 prisoners, amongst whom there is one leper only.—(*Dr. Plank.*)

The population of the North-Western Provinces, where the census was taken in 1854, was 29,000,000; the population of Central India is unknown. It is probably about 10,000,000.

Births and deaths are not registered.—(*Dr. Murray.*)

Banda.—The estimated population of the district of Banda, from the last census taken in February 1861, was 718,872. Of the city of Banda the total population is 30,982, as by last census, 30th March 1860, males 15,518, females 15,464.

Bareilly.—The estimated population of the city of Bareilly is 111,332. The last census was taken in 1853.

Almorah.—193,691 males; 173,632 females; total, 367,323. Census was taken in the year 1853.

Mozuffernuggur.—Within the last two years the officer engaged in the settlement of the land revenue of the district computed the population at about 646,000, which gives an average of nearly 400 souls to the square mile; but the people are not uniformly distributed, as it is found that on the best irrigated lands, where the soil is highly productive, they number nearly 500 to the mile, while on the less fertile tracts, with scarcity of water, they do not reach much over half that amount (May 1864).

Bijnour.—The last estimate of population of the district was made thirty years since, and the population was then about 670,000.

Interrogatory XVII.

Meerut.—In the plains, lepers are vagrants and wanderers, and are seen in every district of the North-Western Provinces, but congregate more in certain localities, viz., Hurdwar, Bindrabun, and Benares. Dr. Kirton states that at the station of Mozuffernuggur, with a population of 13,000, there are twelve known cases of leprosy, and in the other towns of that district the same proportion is believed to hold good.

In the city of Budaon there are 50 lepers out of 26,369 inhabitants, and about 200 in the whole district of Budaon, with a population of 639,637. Could these calculations be relied upon, the proportion of lepers, even in the districts composing the Meerut and Rohilcund Revenue Divisions, would be found very numerous, and statistics on this point can readily be obtained through the tehsildars employed in the several districts of the North-Western Provinces, but an order of Government would be necessary on the subject.—(*Dr. Wilkie.*)

Sreenuggur.—There are some villages and divisions of the district in which leprosy prevails most; but I failed in my attempt to estimate the number of lepers and population in each of those places.

Leprosy prevails most in the following divisions of the district:—

Nadelsew.	Bylote.
Chowndcote.	Sylla.
Tollye.	Dhangoo.
Buddulpore.	Ajmere.
Shabhee.	Langour.
Goojroo.	Oudeypore.

Mozuffernuggur.—Judging from the best information that can be obtained, it does not seem that leprosy prevails more in one part of the district than in another.

In the sudder or chief station, with a population of about 13,000, there are only 12* known cases, and in the other towns the same proportion is believed to hold good. The chief forms of the disease met with consist of juzam, soonbeharee, and baras. It is rare that filpa (or elephantiasis) and bohaq occur. No case of elephantiasis has been seen involving the scrotum, a condition by no means rare in Bengal.

There are several towns of similar or nearly similar capacity to that of the chief or sudder station, and the proportion of lepers to population in them is ascertained to be the same, or nearly so, as that mentioned as existing in the latter; and the villages, which are very numerous, and contain by far the greater bulk of the population, maintain about the same proportion. It is inferred that, throughout the district, the average proportion of those affected with the disease amounts to something under one to every thousand of the people.

III. PUNJAB.

Interrogatory I.

Hill States.—Leprosy is not an uncommon disease in the mountain districts which I have visited, namely, those situated between the rivers "Beeas" and "Sutlej," and between the "Sutlej" and "Tonse."

The most common forms of leprosy in the tracts of country contained between the above named districts, where they flow through the Himalayan provinces, are the lepra anæsthesiaca and lepra tuberculosa; I have seen also a few cases of the white leprosy, or "berat lebena:" of these the lepra anæsthesiaca is most often met with.

Bhutteeana.—Leprosy is not known in this district; people come in here for treatment in the Government charitable dispensary from the foreign states.

a. The forms I have seen are the tubercular and the non-tubercular; the latter is the most frequently seen.

Lahore.—Leprosy is by no means an uncommon disease at Lahore, as well as in many other places in the Punjab. Its true form, or what is called the lepra tuberculosa, generally occurs, as its name implies, in the form of tubercular patches that chiefly manifest themselves, at least in the early stage of the disease, on the forehead, the face, the nose, and the ears; the upper and lower extremities, as well as the trunk of the body, become afterwards involved in a similar manner.

The tubercles are generally small, round, soft, of a reddish, livid, or bronze colour, according to the complexion of the individual affected, and look as if they were full of oil.

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* This number alludes only to cases known to the native official authorities, through whom the information has been obtained. There must at least be as many more suffering from the disease not known, or who do not show themselves, and probably a still greater number of incipient cases not readily noticed.

The sensibility of the parts is more or less impaired, especially the hands and feet, which often become also stiff and swollen.

Some of the mucous surfaces of the body also suffer. The conjunctivæ are generally red and swollen, and the eye-lashes fall off; the sense of smell becomes impaired in many cases, and in some there is also a highly offensive sero-purulent discharge from the nostrils present, with caries of the cartilages of the nose and of the turbinated bones; the larynx also sometimes ulcerates, and there is cough, attended with a hoarse nasal voice, and occasionally with aphonia.

Besides this, and the anæsthetic forms of the disease, there is the white or the Jewish leprosy, the berat of Moses. Of this I have seen instances of both the berat lebena and the berat cecha, or the bright white and the dusky lepra. The berat lebena occurs in the form of one or more pearly spots; the white patches are the same as the healthy skin, except in colour, and that they are either free from hairs, or that the hairs turn white and silky; sensibility is not affected in pure cases. I have seen the disease co-existing with the lepra anæsthesiaca as well as with true (tubercular) leprosy.

The natives consider albinoes to be lepers, the disease being supposed to be berat lebena; and indeed the white leprosy appears to me to be physiologically undistinguishable from albinism, except in the fact of the latter being congenital and affecting the whole body, and the former not congenital and affecting only parts of the body; both consist of an absence of pigment, and do not of themselves affect the general health.

The syphilitic lepra generally occurs in the form of irregular copper-coloured patches on the whole body, especially the face, to which they impart a peculiar puffy appearance, somewhat resembling what occurs in the tubercular form of the disease. In some cases these patches are of a bronze colour, and thus constitute what Willan has called the lepra nigricans. In the history of most of these cases, some previous attack of primary syphilis can be distinctly traced. It is not unusual for this to run into the true tubercular form of the disease.

The last form of the disease that is to be mentioned is the lepra squam-os-a, which I consider to be identical with psoriasis, of which it is but an inveterate form, and to which Willan has given the name of lepra vulgaris.

Loodiana.—Leprosy does not occur frequently in any part of this district. Of 19 persons affected with the disease, 3 only were natives of the town of Loodiana, the population of which is about 40,000; 6 came from different parts of the district, the total population of which is 525,498; 9 from other districts and native states in the Punjab; 1 from Oude.

It occurs in the anæsthetic and tubercular forms; both forms are also sometimes seen in the same individual.

In cases where both forms (anæsthetic and tubercular) are observed, the symptoms of one form only first occur, followed after a considerable interval by marked symptoms of the other form.

Interrogatory II.

Hill States.—I have not seen or heard of any form of leprosy occurring in infancy; it appears usually to show itself shortly after puberty.

Bhutteeana.—On a reference to the Hospital Register, I find the average age at which the disease manifested itself to be 29; the earliest symptoms are generally stated by the patients on enquiry to be, first redness of the skin of the face, hands and legs, then the cuticle elevates, becomes tense, and is filled with serum, unlike bulbous eruptions, &c.

Lahore.—Tubercular lepra (and it is of this form only that I shall now speak) generally manifested itself at some time after the age of puberty; rarely, if ever, during infancy or childhood. The disease at first appears in the form of a number of discoloured spots on the skin, which becomes thickened, and in which sensibility is impaired, and tubercles are deposited in a slow manner.

Loodiana.—According to the patients statements of 19 cases examined by me,

None were affected under 7 years of age.

From 7 to 10 years of age - -	4	From 30 to 40 years of age - -	2
„ 10 to 20 „ - -	6	„ 40 to 50 „ - -	3
„ 20 to 30 „ - -	2	„ 50 to 60 „ - -	2

So that 10 out of 19 appear to have become affected between the ages of 7 and 20 years.

In the tubercular form the first symptoms are erythematous eruption on the skin. In most cases the skin of the face is first attacked. In some there is sense of internal heat and fevers; in others there is no constitutional disturbance. The eruption is soon followed by thickening of the skin and development of tubercles along ridge of eyebrows, helix of ears, &c.; hair of eyebrows and often of eyelids falls off.

In 7 out of 11 cases of the anæsthetic form the earliest symptom was anæthesia in a patch of skin near the knee, ankle, or wrist-joints.

In one case (marked No. 2) the first symptom that attracted attention was the appearance of a bleb on one finger. This broke, discharged watery fluid for some time, and ended in loss of bone of finger. In the remaining three (anæsthetic), all of whom were women (Nos. 9, 10, 11), the first symptom was said to have been erythematous eruption over the face. The disease may have been of the tubercular form at first in these three cases; the erythema had subsided, and none but anæsthetic symptoms were present when the patients were examined by me.

In the mixed cases (Case No. 16), one patient states that, after suffering for months from ague, he found skin of legs anæsthetic up to hips; other symptoms of anæsthetic leprosy subsequently showed themselves; seven years afterwards had erythematous eruption on face followed by development of tubercles.

A second (Case No. 17) states: After suffering from malarious fever and spleen for three months, found that a patch of skin on dorsum of right foot was anæsthetic; this was followed by bullæ, ulcers, and loss of bones of toes; tubercular symptoms showed themselves four years afterwards.

The third (Case No. 19), erythematous eruption on face, tubercular swellings over eyebrows and on ears, falling off of hair from brows. About one year afterwards anæsthetic symptoms occurred.

The fourth (Case No. 18), erythematous eruption on face, tubercles along brows, helix of ears, falling off of eyebrows, &c. Anæsthetic symptoms commenced five or six years afterwards.

Interrogatory III.

Bhutteeana.—From what has been stated above, this disease takes about five or six years to develope itself during the adult period of life. The few cases that attend the Government charitable dispensary for a time only, when relieved, return back to their homes, and come back again. I have seen them lingering thus for the last 10 years. It has been told to me that the disease proves fatal after 20 or 30 years.

Loodiana.—I have not been able to ascertain at what period of life or after what length of time the disease generally proves fatal; but the impression among the natives here seems to be that it does not shorten life to any remarkable extent.

Interrogatory IV.

Hill States.—Leprosy is by the hill people said to affect both sexes alike. I have seen more men than women affected. This may arise from a dislike frequently shown on the part of the women to apply for medical aid.

Lahore.—I think that both sexes are equally liable to the attack of leprosy.

Loodiana.—As far as I have had opportunities of observing, men are much more liable to the disease than women, in the proportion of nearly four of the former to one of the latter.

Interrogatory V.

Bhutteeana.—I have seen it attacking in equal proportion the Hindoos and the Mussulmans.

Lahore.—White races of men seem to me to possess a considerable degree of immunity from its influence. I have seen numerous instances of it among the dusky inhabitants of the plains, only two among Eurasians, but none among Europeans or the hill tribes.

Loodiana.—I find that in 19 cases, 18 were Punjabees and 1 an Oude man; 12 were Mahomedans; 5 Hindoos or Sikhs; 2 low-caste men. The Cashmeerees and Affghans who form a considerable part of the population of the town seem to be but very little subject to the disease.

It is remarkable that the Mahomedans should suffer so much more from the disease than the Hindoos. The latter are generally more cleanly in their habits and more particular in their diet than the former.

Interrogatory VI.

Hill States.—The greater number of persons affected with leprosy whom I have seen belonged to the very lowest and poorest classes, and the circumstances which seem to favour its development among them are the badness of the food they eat, and their extremely filthy habits.

a. The filthy state of the houses inhabited by this class is almost beyond belief. The immediate neighbourhood of their houses is also always extremely dirty; heaps of manure, human ordure, and filth of all kinds are allowed to collect and remain here for lengthened periods, and never thoroughly cleared away.

b. Their diet is of the coarsest description, being usually a grain called "bathoo," from which they make bread that is nearly black. This is imperfectly cooked, and eaten unleavened. Poppy seed and salt is often mixed with it. They are very fond of salt, and eat it in large quantities. It is of an inferior quality, being the dark grey rock salt. Whenever they can get it they eat meat readily, but are not at all particular about its quality. They never refuse the flesh of animals that have died from disease. They eat bear's flesh, and it is said also the flesh of wild animals, such as leopards, &c.

c. Their usual occupation is preparing leather; working in leather, &c. They also cultivate small plots of land.

Lahore.—I think that the disease is more prevalent in low, warm, and humid localities, especially those with a variable climate, than in places where the opposite conditions prevail.

It is so frequent among the ill-fed, the ill-clothed, and the filthy of our species, that it may not be improperly called as a disease of mendicants.

Loodiana.—

a. The character of the district generally is dry and sandy; the wells, except in the towns and villages on the banks of the Sutlej, about 30 feet deep; rain-fall not heavy; land naturally well drained; there are no hills nor any very high ground nearer than 60 or 70 miles, nor any swamps; there is but very little rice grown in it, and that only on the banks of the river. The land is mostly under cultivation; there are no forests of extensive jungles in it; there is rather a scarcity of trees; there are no canals. The district is bounded on the north by the river Sutlej. There are three or four large towns and many large villages, but the district itself is not thickly populated. Malarious fever, usually intermittent, prevails annually after the rains, but not more so than in other districts in the Punjab.

b. I have no reason to believe that the sanitary condition of the dwellings of persons who have become affected with leprosy differs in any respect from that of thousands of similar habitations in the district.

c. The labouring classes in the district are not generally cleanly in their habits; they seldom wash and bathe, as do the Hindoos, &c., in Bengal and the North-Western Provinces.

d. They all live more or less alike; their ordinary diet being what they call "dâl-roti," *i.e.*, baked unleavened cakes of flour of wheat or Indian corn, or millet with some admixture of barley. This they eat with boiled pulse (dâl) and ghee (clarified butter); the usual condiments being salt, red pepper, garlic, turmeric, &c.

They eat meat but seldom, from once to three times a week, but often not more than two or three times a month; generally drink milk or butter-milk daily; eat fresh vegetables, both raw and cooked, when in season, and sugar-cane, melons, &c., in large quantities.

The Mahomedans eat meat much more frequently than the Hindoos and Sikhs, and the low-caste men eat the flesh of almost all animals, clean and unclean, whenever they can get it. They all get a plentiful supply of the coarse food they are accustomed to, in fact live well; scarcity of food is almost unknown to them.

e. The majority of the inhabitants of the district are field labourers, and work very hard. Most of the lepers that I have met with attribute the disease to some chill they had been subjected to when their bodies were much heated during the hot season

Interrogatory VII.

Hill States.—The people themselves say that the disease is much aggravated by the coarse food they eat, and particularly when meat is eaten.

Lahore.—Improper nourishment, exposure to the vicissitudes of weather, and neglect of cleanliness, or, in other words, the circumstances which tend to produce the disease, all seem to aggravate it.

Interrogatory VIII.

Hill States.—Lepra tuberculosa and lepra anæsthesiaca are said by the hill people to be undoubtedly hereditary. I have seen cases in which one or more members of a family were affected, while the others were free and in every respect apparently healthy.

Bhutteeana.—I am aware of the circumstance that one member of the family has become affected, whilst all the rest have escaped from its effects.

Lahore.—It is often hereditary, but not always so. I have seen an instance of several healthy children whose father was a confirmed leper. I have also known instances in which one only of a family has been affected while others remained free.

Loodiana.—The impression among the natives is that the disease is generally hereditary, but almost all the lepers examined stated that their parents and ancestors, as far as they knew, were healthy.

Of the 19 cases of leprosy examined by me not one appears to have been hereditary. I have been obliged in these inquiries to rely on the statements made by the patients. I do not think they could have any object in deceiving me on this subject.

Interrogatory IX.

Hill States.—I have not. Syphilis is extremely common in these mountains.

Bhutteeana.—Yes; more than half the cases that presented themselves in the Government charitable dispensary suffered under some form or other of syphilis.

Lahore. I have every reason to believe that leprosy is often, but not always, dependant upon syphilis, which may be considered as one of its most powerful predisposing causes.

Loodiana.—I have no reason to believe so.

Interrogatory X.

Hill States.—I have not.

c. It is believed to be so.

Bhutteeana.—No.

Lahore.—I have not, nor do I believe it to be so.

I have, however, met with an instance in which it was transmitted by sexual intercourse, in which fecundation was also the result.

Loodiana.—I may mention that five children of lepers have lived in the village with lepers all their lives, and are said to be perfectly healthy. The eldest is 16 years of age, the youngest 5 years. Two of them, one six years old, son of Jeewee (Case No. 15), the other five years old, son of Abbo (Case No. 9), were shown to me by their mothers. The fathers as well as the mothers, in all these cases, were said to have been lepers long before the birth of the children.

c. I have never met with a case where the disease had been supposed to have been so transmitted.

Interrogatory XI.

Hill States.—Yes. Persons so affected are not permitted to marry.

Bhutteeana.—In this district the native community do not communicate freely with those affected with leprosy. Marriage, cohabitation, sociality, &c. are at once prohibited, The poor unfortunate sufferer is allowed to remain in a far detached place; meals are given to him in separate receptacles kept for the purpose; in fact, he is treated as an outcast.

Lahore.—There is no enforced segregation.

Loodiana.—No. The inhabitants of the towns and villages themselves prevent such communication occurring. The authorities do not, I believe, in any way interfere, beyond providing a village outside the chief town in the district (Loodiana) as a residence for the lepers. When a native of a village in the district becomes affected with leprosy, a house is built by his neighbours for him outside the village, and he is supplied with food, &c. by his friends. If he prefers it, he comes to the leper village near Loodiana. The solitary hut of the leper is to be seen outside many of the larger towns and villages in the district; one here and there.

Interrogatory XII.

Hill States.—I believe that there is an asylum for lepers near the Hill Station of Dhurmsala. I have not had an opportunity of visiting it.

Bhutteeana.—No other public provision exists in this district for the reception of leprous poor than the charitable dispensary, where he is kept in a separate ward for treatment. The building is lofty and freely ventilated. Beds and blankets are provided, and, if indigent, he is fed at the Government expense whilst under treatment.

Lahore.—Most live as roving mendicants. They are very seldom admitted into general hospitals; a few only are sometimes accommodated in ordinary pauper-houses, where they are simply fed and clothed at the public expense.

Loodiana.—They are not admitted into hospital or dispensary, nor are there separate infirmaries or asylums for them.

They attend at the dispensary as out-patients, if they choose to do so.

Interrogatory XIII.

Lahore.—In this, the district of Lahore, there used to be maintained for some time past about 15 lepers in a day, who are now transferred to the leper village at Torunturun, a place about 40 miles from here, situated in the sister district of Umritsur.

Interrogatory XIV.

Loodiana.—From the statements of the lepers themselves the disease seems to have decreased in this part of the country of late years. They say that 20 years ago there used to be about 100 lepers at the village There are now about 25.

Within the last 20 years, since the Punjab came under British rule, the sanitary condition of the towns, &c., by attention to cleanliness, drainage, widening streets, making roads, &c., has been much improved.

These measures must have a beneficial effect upon the general health of the people.

Interrogatory XV.

Bhutteeana.—As patients do not generally resort to hospitals unless the disease has advanced a good deal, I have under such peculiar circumstances found the following to relieve the symptoms a good deal: preparations of arsenic, potassi hydriodati: with infusion of hemidesmus indicus (ununtamool), ounce i. three times a day; or chaool-mogree pills, grains v. each, three times a day; locally, chaool-mogree ointment or the bipchee ointment. The latter I have found very useful, and I generally prefer it. The diet should be mild and nourishing.

The disease appears to be aggravated by the bad plan of treatment adopted at first by the native quacks. By them the preparations of mercury, particularly the corrosive sublimate, are administered without the slightest hesitation. Venesection is also carried on to extreme by them. Frequent purgation and low diet are also enjoined, to add to the sufferings of the poor and unfortunate victim.

Loodiana.—Some of those least and most recently affected have been tolerably regular attendants at the dispensary, and by tonics, dilute nitric acid, and chiretta, slightly stimulating embrocation to diseased skin, daily bathing, and general attention to health, they have certainly improved in condition.

Interrogatory XVI.

Hill States.—These mountain states being under independent chiefs, no regular census is taken.

Bhutteeana.—The estimated population of this district of Bhutteana, agreeably to the last census taken in 1861, was 126,946 souls.

Lahore.—The district of Lahore, extending over an area of 3,608·45 miles, contains a population of 649,447 souls, as ascertained by the census held in 1854.

There is no register of births or deaths kept up either here or in any other part of the Punjab.

Loodiana.—The population of the district is 525,498.

The last census was taken in 1861.

No such registration has ever been established in this district.

Interrogatory XVII.

Loodiana.—In the course of my enquiries I have not been able to come to any conclusions as to the predisponent or exiting causes of the disease, which, as seen here, singles out one member of a family, all of whom are living under precisely the same circumstanees in every respect, occupying the same dwelling, subsisting upon the same kind of food, following the same employment, and, it may be presumed, all of somewhat similar constitutions. As a rule, one only is affeeted with the disease; the rest escape.

In almost all the cases I have met with, the disease appeared to have had a spontaneous or accidental origin; neither the patients nor their friends are aware of any circumstances which would show a predisposition to the disease.

The plan sanctioned by the Punjab Government, about six or seven years ago, of distributing "quinine" among the people of the district during the time that fever prevails, is, in my opinion, one of the best preventive measures that could be adopted.

Most of the lepers I have examined said that, after the first year or two or three, they had suffered but little pain from the disease.

But they did complain of the hot weather, and stated that their condition improves and that they are capable of much greater exertion in the cold weather than in the hot; they seem to feel the heat extremely.

Most of the men, who became affected with anæsthetie leprosy early in life, say that they are impotent; those who became subjects of the disease later in life say that they are affected in the same way, but not to the same extent.

There are no documents, printed or manuscript, describing the disease as it prevailed at any former period; nor are there any works bearing on the vital statistics of the district.

IV. RAJPOOTANA.

Interrogatory I.

Serohi, Aboo.—Leprosy is known in Serohi, in which state Aboo is situated. The anæsthetic form is the only one I have met with.

c. The anæsthetic form of leprosy commences by general loss of sensation in the upper and lower extremities. Two patients have stated that this loss of sensation was ushered in by feverishness and loss of eonsciousness, lasting 24 to 48 hours. The loss of sensation comes gradually on, and is succeeded by the formation of bullæ on the extremities of the fingers and toes, afterwards on the palmar and plantar surfaces of the hands and feet.

These bullæ burst, and leave deep-seated ulcers, which gradually heal, to be succeeded by others; the nails frequently separate, and are not reproduced; at other times the nails remain rudimentary, while the fingers and toes have been atrophied to one third or one fourth their former size.

The characteristic symptoms are, lessened or lost sensation in the hands, arms, and feet, and the bullæ mentioned above.

It is known by the name of korh.

Jodhpore.—Leprosy is known in the state of Jodhpore, but is not a common disease in the district; that form known as the anæsthetic variety is most commonly presented, characterized by whitish discolourations or watery bullæ, and terminating in ulcerations; these chiefly attack the fingers and toes, and the disease terminates by the accession of diarrhœa or dysentery.

Ulwur.—Leprosy is known in the state of Ulwur; more in Ulwur itself than in the adjoining villages, probably due to the larger population and greater number of poor people. The variety met with is that known as the lepra anæsthesiaca; I have never met with a case of lepra tuberculosa, nor have I observed in this state any characteristics of the form which were pointed out to me among the Crim-Tartars and Russians, and known to dermatologists as lepra taurica, or "leprosy of the Crimea."

The disease generally commences with tingling and loss of sensation, followed by or accompanied with a whitish hue of the skin The absence of sensibility rapidly spreads from the general surface to the extremities. This whiteness may appear in the form of spots on the skin, though in most of the cases I have observed it has been uniform in appearance; the hair falls out in patches; after a time the loss of sensation becomes complete, the skin remaining cold, but in other respects unaffected, neither itchy, painful, perspirable, nor swollen. The whiteness of the skin may, after a variable period, extend over the surface of the body. In the cases I have seen, the disease has been confined to the extremities. As the disease advances, the functions generally become sluggish, ulceration sets in, and soon affects the subjacent structures, sometimes a whole limb will ulcerate off, sometimes only a toe.

Harowtee.—The following description (translated by Captain Beynon, political agent, is by "a very intelligent native doctor, in charge of the dispensary at Jhallawar. He "has been employed in these parts for 15 or 16 years, and the natives have great "confidence in him."

There are eighteen sorts of leprosy extant, but in the Harowtee districts five descriptions, and those of the worst kind, have come under my notice; the other thirteen are rare. Out of these five, one is unusually obstinate in yielding to treatment, and generally proves fatal. The name of these five sorts are called, 1st, aihmur, or red; 2nd, asood, or dark, the colour of ink; 3rd, abyaz, or white; 4th, sumkee, from its resemblance to the scales of a fish, and peels off the skin of the patient in the same manner; the 5th is called huzzree, which causes a numbness all over the body, and loss of the sense of feeling, so that the piercing of a lancet is not felt; blisters also form all over the person, and these turn into sores.

The kind of leprosy which has a reddish appearance is the worst; the symptoms are as follows:—On touching the person in any part it causes a sensation similar to that of a foot being asleep; the skin is very dry; the limbs and face become swollen; a sort of continual irritation on the tips of the fingers and toes; the nails become thick and deformed, and drop off; sores break out, and the whole body is covered with open and sloughing sores, and from this stage the patient generally lingers and dies.

Jeypore.—Leprosy is very rare in Rajpootana.

The cases which I have seen amongst natives in this part presented the following symptoms:—Tumid and swollen features of the face, with pale and thickened integument over the superciliary ridges; weak and languid circulation; hypertrophied extremities, with coldness, stiffness, partial or complete loss of sensation; dry and fissured state of the palms of the hands and soles of the feet; skin generally dry. As the disease advances, the extremities, viz., fingers and toes, become gangrenous and fall off one after the other. In this stage there was some febrile excitement during the separation of the extremities.

Interrogatory II.

Serohi.—Usually between 20 and 30 years of age.

Jodhpore.—Generally occurs in middle age. It will mostly be found that the patient has suffered much from malarious fever.

Ulwur.—I have seen the disease in a boy of 12 years of age; but generally speaking between the ages of 20 and 40.

Harowtee.—Generally about the age of 15; not later than 40 years

Jeypore.—At different ages. The first symptoms visible are either a tumid appearance of the features, with thickening and pale colour of the integument over the eyebrows and extremities, and sometimes patches of a dusky hue over the body, accompanied with a burning sensation ; at other times simply a discolouration of the skin without any other symptoms.

Interrogatory III.

Ulwur.—The period of the disease attaining its full development is uncertain, depending upon a variety of causes. It is hastened, however, by poor living, want of cleanliness, mendicant misery, and exposure to cold and damp. I have never known a case terminate fatally in any one under 40.

Harowtee.—Between the ages of 50 to 60, though there are cases where the patient has attained the age of 70.

Interrogatory IV.

Serohi.—I have met with an equal number of cases of each sex in Serohi. Native opinions say it is more frequent in the male.

Jodhpore.—Both sexes in equal proportion.

Harowtee.—More frequent in the male sex.

Interrogatory V.

Sehori.—Only in the coloured races.

Harowtee.—In the Harowtee districts it is more frequent among Chumars and Dakurs, who prepare skins, and others of the lower classes. Chiefly those of a sallow complexion are attacked, though I have observed it among those who have a dark complexion, though not so frequent.

Interrogatory VI.

Jodhpore.—Most prevalent amongst the lowest classes. There is no sea coast, but much low, sandy, malarial soil. The sanitary condition of the inhabitants as bad as can well be ; personal cleanliness frequently neglected ; diet chiefly vegetable ; occupation agricultural. The development of the disease appears to be favoured by want of attention to sanitary requisites, by poor diet, and want.

Ulwur.—The poorer classes. Privations of any kind, vicissitudes of temperature, and I have no doubt that many of the poorer classes in India suffer from the disease on account of inferior, innutritious, or diseased grain. The natives are very fond of hoarding up their grain, and it is frequently sold in the bazaars when 10 and 12 years old.

Jeypore.—I have witnessed it in the wealthy and in the indigent, more so in the latter.

It appears to occur as much in those who live on the usual kinds of food and who are naturally cleanly in their habits as in those who live on bad food and are uncleanly in their habits.

Interrogatory VIII.

Ulwur.—Out of the 20 cases I carefully inquired into, the disease in 16 was clearly traceable to family taint.

Harowtee.—From inquiries I have made it does not appear to be hereditary. I have known one of the family a leper, while none of the rest were attacked, or even any sign of the disease show itself.

Interrogatory IX.

Jodhpore.—I believe a person affected with secondary syphilis will be more likely to become the subject of leprosy, in consequence of the cachexia the first-named disease induces. I believe both diseases may exist, and become as it were blended together. I do not think there is any such disease as syphilitic leprosy, that is, leprosy arising from syphilis as an exciting cause.

Jeypore.—I am not aware that this disease is connected with any other.

Interrogatory X.

Serohi—Jodhpore—Ulwur—Jeypore—Harowtee.—The replies of Dr. Lownds, Mr. Moore, Mr. Dickinson, and Dr. Burr are in the negative. Mohamed Naeem says that he has known one case in which the servant of a leprous person took the disease by waiting upon his master. On the other hand, he mentions the instance of a woman in the last stage of leprosy having a child two years old at her breast; she died in the hospital; but her boy, now 16 years of age, is a fine strong youth, without any trace of the disease.

Interrogatory XI.

Serohi.—Lepers are forced to live outside of villages by the inhabitants, but there are no regulations on the subject. At Mount Aboo the lepers live by themselves in a cave.

Harowtee.—Lepers are avoided, though they are not confined or restricted to any particular locality.

Interrogatory XII.

Harowtee.—There is no provision made for the reception and treatment of the leprous poor by native states, beyond what is provided for in the public dispensary, though those who are entirely destitute are generally allowed some small provision.

Jeypore.—Lepers are admitted into hospital.

Interrogatory XIV.

Harowtee.—Cases are certainly fewer, which now come under my notice in this dispensary, than they were when I first arrived, some 15 years ago.

Serohi.—It has not seemed to me to be on the increase during the eight years I have been at Aboo. All the lepers who have come to me state their birth-places as in the plains; hence all may be looked upon as imported cases.

Interrogatories XV., XVI., XVII.

Scarcely any information is given in reply to this or to the following two queries. No census has ever been taken in any of the native states.

V. CENTRAL INDIA.

Interrogatory I.

Indore.—Leprosy is a disease that is but rarely met with in those parts of Central India with which I am most familiar, viz., Indore, Dewass, Augur, Mehidpore, Rutlam, Oojein, Sillana, and Dhar.

Although rarely met with in and about Indore, there is no town of any considerable size in Western Malwa that is free from lepers; I know of lepers at all the places enumerated. In Indore I have collected notes of 25 cases, all of them being lepers, residents in Indore or its vicinity.

The disease is known to the natives by various names; the better educated call it "fasad khoon," or depravity of blood; by the vulgar it is styled indifferently "korh" and "juzam;" amongst the Mahrattas it is known as "rugt pithee;" (rugt, blood; pithee, eruption or defluxion).

The greater number of cases I have drawn up notes of presented themselves with horrible deformities of hands and feet; the toes or fingers being partially or wholly lost, and the foot or hand chubbed and atrophied; the integument of legs and arms, the seat of a dry mangy looking eruption; the nose sunk in, the voice nasal, the eyebrows thickened and frowning, and the lobulus of the pinna of the ear hypertrophied; horribly repulsive looking objects.

The change that takes place in the hand is most curious; the fingers by some interstitial absorption become shortened and incurved towards the palm; the nail curves over the finger tip, and the whole member looks more like the claw of a bird than the hand of a man.

At the same time the plump mass of muscle between the thumb and forefinger (the abductor pollicis and abductor indicis muscles) becomes absorbed, and this muscular atrophy is followed by that of the "interossei" and other muscles, until the member loses all plumpness and shapeliness, and becomes a very nightmare of a hand.*

The palm is coincidently the seat of more or less severe psoriasis, which leads to deep bleeding cracks of the part, and these to ulcerations.

The less degree of mobility in the toes prevents their assuming the strange claw-like deformity of the fingers, but they become atrophied, incurved, and grow awry; some curving to the sole, others twisting towards the upper part of the foot, all hastening to the inevitable goal of ulceration.

These diseased members being endowed with very little sensibility, the patient is spared much anguish that the appearance of the parts would lead one to predict.

The furfuraceous, dry, brawny condition of the rest of the limb becomes aggravated in bad cases into a state resembling ichthyosis, and that described by writers as pellagra, a skin disease common in the Italian peninsula.

I have seen the skin of the legs of lepers exactly like the bald mangy flanks of a pariah dog, and again like the shaven skin of a camel, the subject of cold weather itch. These are familiar illustrations, but they were irresistibly suggested to me, and their truth was accepted with eager readiness by some of my native doctors.

I have spoken of the falling in of the nose. This is not a constant symptom; it results from the disease attacking the schneiderian membrane and nasal bones, and which in more than one instance had been aggravated by the complication called by natives "peenass," in which the mucous lining of the nostrils and frontal sinuses become fly-blown, and breeds vast quantities of larvæ; coincidently with this the alæ nasi become atrophied, and the voice becomes nasal in tone. Occasionally the nose is the seat of hypertrophy, which condition is always accompanied by a thickened state of the integument of the eyebrow, and a prominence of the sebaceous glands of the same parts, sometimes generating into "ae ne," also at times by a thickening of the lobulus of the pinna of the ear.

The integument of the back is generally shiny and very dry, and is occasionally the seat of a liver tinted decolouration which I look upon as akin to "albinism." Such is a picture of the leprosy of these parts.

Augur.—Leprosy is of frequent occurrence in Malwa, Central India.

The forms of cutaneous eruption peculiar to leprosy which I have met with are three:—

1st. Consists of a tumefaction or thickening of the skin in large patches, one on each cheek, eyebrow, lobe of the ear, on the nose, lips, and chin, also over the upper part of each sterno-mastoid muscle, just below and behind the ear. The skin in the affected parts is of a darker colour; looks coarse and slightly uneven; feels thickened, firm, and somewhat tuberculated. The margin of the patches is undefined, and shades off into the healthy skin. The sensibility of part is unaltered.

In cases in which this eruption occurs it is almost always the first symptom of the disease, and is followed by the anæsthesia, sooner or later; it may be in a month or two, or not for one or two years. In a very few cases the two symptoms are cutaneous, and in fewer the anæsthesia is first developed.

2nd. This eruption consists of spots or patches of a circular shape, varying in size from a small papulæ to two or three inches in diameter. In the large spots the centre is depressed, smooth and whitish, the margin defined and raised, of a pale red colour, and, when not exposed to friction, covered with a minute white powdery desquamation. There is loss of sensibility in these patches from their earliest appearance, which increases till there is perfect anæsthesia in their centre, shading off into slight numbness at the edges. The eruption begins by a few spots, others follow, new ones continuing to be developed during the entire course of the disease. The spots first appear as small papulæ, very much resembling those of urticaria. These slowly increase in size, preserving their circular form till they are two or three inches in diameter, or often coalescing from large irregular shaped patches. Like the first form of eruption,

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* Dr. Brodrick alludes to a case of "section of the ulnar nerve and wound of the median nerve," published by Mr. Jonathan Hutchinson in the Medical Times and Gazette, Feb. 14, 1863.

Three months after this accident, which occurred to a girl aged 15, the hand of same side is chilly, and bluish red in colour, all the finger nails are clubbed, and decidedly more curved than those of the other hand; all the fingers are bent towards the palm; the muscles clothing the metacarpal bone of the thumb are much wasted; on the back there is a remarkable hollow between the thumb and forefinger, and the metacarpal bone of the latter is immediately under the skin, the abductor indicis being quite wasted.

this, except the deformity, is of no inconvenience, and derives its importance from the co-existence of the leprosy. I think it is almost always cutaneous, with anæsthesia in the extremities.

3d. This form consists of an eruption of large vesicles filled with clear serum; they form suddenly, with little pain or inflammation; on bursting leave superficial ulcers, which at first heal quickly, leaving depressed white shining cicatrices. On certain situations, both on the trunk and extremities, these vesicles continue to recur till the integument of the affected parts is converted into a patch of dense, hard, white cicatrical tissue. The natural sensibility of these patches gradually diminishes till it is altogether lost.

In many cases, probably a third of the whole, the disease is unaccompanied with any distinct cutaneous eruption, and is characterised by the occurrences of irregular patches of anæsthesia, more or less complete, on some part or parts of the surface of the body; the integument on the patches is paler, looks and feels drier, and is colder than the surrounding skin. There is also a minute brawny desquamation from the parts.

In consequence of the anæsthesia, the nutrition of the affected parts is much impaired, the muscles of the hands and feet are greatly wasted, so that little remains but the skin covering the bones; these two are affected, becoming greatly diminished in size and the cartilages of the joints absorbed, so the fingers and toes become firmly contracted in a semi-flexed position. At an indefinite period after the developement of anæsthesia, a large blister or flattened vesicle, containing dirty reddish serum, forms suddenly and painlessly in one or more of the fingers or toes, the vesicle bursts, leaving a superficial ulcer, which gradually deepens, partly by ulceration, but more by absorption, till it opens the articulations, and exposes the ends of the bones, which necrose; at length all the soft parts are cut through, the finger or toe falls off, and the stump gradually heals; vesicles form in other fingers or toes, ulcers follow, till in some cases the greater part of the fingers and toes are destroyed; ulceration often attacks the mucous membrane of the nose, destroying the bones, and producing flattening of that organ; in a few cases it attacks the fauces and larynx, followed by husky voice, cough, puriform and bloody sputa.

Nimar.—Leprosy prevails throughout the province of Nimar, in Central India, and, as it occurs there, shows itself as a disease more especially of the face and extremities, and is marked, as a rule, by mutilation either from sloughing or from insterstitial absorption, and is attended with anæsthesia in about 40 per cent. of the cases.

The voice is almost invariably altered in tone, and occasionally lost; the nose in many instances is sunken, but the sense of smell, excepting three or four per cent. of cases, is unimpaired; sight is wholly or partially destroyed from ulceration of the cornea in about 15 per cent. of cases; hearing is lost in eight per cent., and taste in two per cent.

a. There are several different outward manifestations of leprosy, and the natives have a great variety of names to designate the disease; of these raktpitti (rakt, blood; pitti, bile,) and korh are the most common.

b. These several manifestations are, in my opinion, only varieties of one common morbid state. Anæsthetic and tubercular leprosy, usually described as distinct, are so closely associated in the cases I have seen that it is impossible to give a separate description of them. I regard the disease as one morbid state, but multiform in its manifestations, a disease presenting so many diversities that an attempt to classify given cases under certain heads would be quite futile; anæsthesia, although frequently present, is more often absent, and I have several times noticed its absence in cases which in other respects appeared precisely similar to those in which it was present.

Bundelkund.—Leprosy is known in Bundelkund.

a. Two forms, tubercular and anæsthetic.

Native names; 1, rugut-pithee; 2, soonbehree; and 3, korh; or 4, juzam; the first generally applied to the tubercular form, the second to anæsthetic, and the third and fourth to the latter when it assumes the gangrenous form, and fingers and toes drop off at the joints.

b. These forms are often co-existent, and appear to have affinity with each other.

c. Symptoms of tubercular form; swollen, roughened, and knotted but often glossy state of the skin, especially of face, and also of hands and arms, with at first painful exaltation of sensibility.

Symptoms of anæsthetic form; loss of sensation in skin of various parts (sometimes very limited and circumscribed), especially of extremities; this often following a

primary increase of sensation, and accompanied by a noticeable smooth and glossy look of affected part, with a lightening of colour in the affected integument, and sometimes, though rarely, with complete loss of colour.

Fingers and toes shrivel and drop off by a sort of dry gangrene or rot; ulcer left on remaining parts generally heals, especially under stimulating appliances; but disease may again carry off a further part.

Large torpid looking ulcers, in which, however, much tissue melts away, are common, especially about feet and ankles.

Gwalior.—Leprosy does occur in the city of Gwalior.* There are several kinds:—

1st. White spots on the surface of the body.
2nd. Black red patches under the skin.
3rd. Cracked skin, with contracted hands and feet.

The third variety commences with paralysis of the part; the skin then cracks, and discharges a watery fluid mixed with thin blood; it terminates by the limb becoming permanently distorted, or else it sloughs away. The natives call this under one common head, korh.

Interrogatory II.

Indore.—The disease appears at all ages between puberty and old age. The average age in my 25 cases was 29½ years.

The lepers I have questioned generally stated that the disease commenced with numbness in the parts attacked, usually the hands or feet, where, soon after the numbness, there would break out patches of eruption which secreted a fine brawny scurf or tetter.

Some describe a condition of the part affected anterior to the anæsthesia, and this is a state of exalted sensibility or hyperæsthesia.

I have been so fortunate as to see a few cases very early in their career, when the disease had only reached the condition of hyperæsthesia.

In these there were portions of the integument raised above the level of the surrounding skin, about the height of one line; this tract was unnaturally vascular; it was an islet of structure whose function was exalted.

In one case these islets were situated over either malar bone, and were subject to itching, pricking, and burning, especially after eating stimulating food; in another case the islets occupied the same site, and also formed a heart-shaped patch on the forehead, whose base was at the root of the nose and apex upwards.

This state, I suspect always pervades the condition of anæsthesia or degraded sensibility, but it is rarely noticed or referred to by the unfortunate patient, whose recollection is absorbed in the more immediate antecedents of the graver stages of ulcerative death of tissue.

Augur.—Probably three fourths of the cases of leprosy occur between puberty and thirty years of age; but the disease is met with at all ages, from childhood to 50 or 55 years. I have not seen it occur in infancy, early childhood, or very old age.

Nimar.—The disease manifests itself at an average age of 28; the average age of the lepers in Nimar is 39.

The earliest symptoms observable are irregular patches of red discolouration of the skin, especially of that of the face, attended with heat, dryness, titillation, itchiness, and, occasionally, formication; headache is frequent; also nausea, anorexia, and general langour; epistaxis is almost always complained of; a peculiar puffiness of the face, entirely altering its usual character, is observed, and gradual swelling of the nose, ears, &c., with incipient tubercular nodes takes place. In some cases after a few months many bullæ appear on the extremities, and are quickly followed by sloughing or interstitial absorption, but they are more frequently absent, and do not appear to be peculiarly noticeable in cases in which anæsthesia afterwards occurs.

The one constant early symptom is redness of the skin of the face. This is the first sign of the coming disease, and from it the natives unerringly predict the approaching affliction.

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* Gwalior is one of the dryest places in India; the soil is very sandy, and the heat great. Leprosy, I believe, prevails to a very slight extent, but it exists to a great extent in malarious districts. In the Terai and on its borders, where the soil is very damp and malaria great, I believe whole villages are attacked with it.

Gwalior.—Generally commences under 30, but no particular period of life can be fixed; the earliest symptoms are swelling of the feet and loss of sensation, also a feeling of coldness throughout the whole body.

Interrogatory III.

Nimar.—At the average age of 36, and within eight years the disease usually attains its full development. I am unable to furnish statistics as to the period of life at which, and after what time, it proves fatal, but from the somewhat conflicting accounts I could gather I am induced to believe that the disease does not materially abridge the term of life.

Interrogatory IV.

Indore.—Of the twenty-five cases reported upon, four were women and twenty-one were men.

Augur.—Leprosy is much more prevalent in the male sex; probably in the ratio of three to one.

Nimar.—The disease is more frequent in the male than in the female sex, in the proportion of six to one.

Interrogatory V.

Nimar.—I have only seen the disease as it affects the coloured races. In the large majority of cases the caste of the sufferers was a low Hindoo one, but the Mussulman caste furnishes examples; still the disease is far more frequent among the half-starved low Hindoos.

Gwalior.—Entirely confined to the natives of the country.

Interrogatory VI.

Indore.—The cases reported upon occurred amongst individuals of the lowest condition of society, excepting in two instances, in one of which the patient was a clerk in receipt of good pay, and the other the daughter of a man who had held a similar position. It is very evident that poverty, hunger, and dirt will invite its development and foster its growth, as they will the proclivity to any other disease, and that lepers will, like other outcast mendicants, have to wage a constant war against starvation. As for employment, they all become beggars as soon as the disease breaks out, when they seem always to leave their ordinary employment, and to wend their way to large towns and cities, where mendicancy is most profitable.

Augur.—Nearly all the cases I have seen occurred among the very poor. In the native town, with a population of 5,550, there are at present 16 lepers.

a. Augur is 1,598 feet above the level of the sea, is drier, less malarial, and much cooler than the greater part of India, and being built on a rocky elevation, the natural drainage of it is very good.

b. The sanitary condition of Augur is, like that of all Indian towns not under European supervision, very bad indeed; all sorts of filth and rubbish being accumulated in every vacant place in and about the town.

c. The poorer classes wear little clothing, and it is seldom washed; they rarely bathe or wash themselves.

d. The ordinary diet of all the poor classes is unfermented bread of millet or wheaten flour, or meal made in thin cakes, and very imperfectly cooked over the fire on an iron plate, and eaten with a little vegetable or boiled pulse; those in more comfortable circumstances use butter, milk, &c., in the preparation of their food; the majority of the people being Hindoos, they are strict vegetarians. The few Mahomedans eat meat when they can get it, but do not escape leprosy. The drink of all classes is almost always water. Four-fifths of the people eat opium largely.

Nimar.—The disease in Nimar (which is inland) occurs pretty equally in urban and rural places, at a low level and in hilly districts. The whole country is undulating, and leprosy prevails throughout it; dampness would not seem to favour its development, as the disease is as frequent on high dry ground as in low damp localities, and the rainfall in Nimar is less than in most parts (the average fall of rain for the last ten years is 30 inches). Malaria does not exert a malign influence; on the contrary, as I before observed, the lepers are not great sufferers from malarious disease.

The ordinary diet consists of cakes made of wheaten flour or dâll, rice, ghee, &c.; some low caste lepers eat meat and fish, found dead, and devour generally what they can get. The lepers cook and eat their food apart from the healthy, although they may live with them. Most of the lepers smoke gunja or country tobacco, and a few with the necessary means eat opium; these last have taken to it as a solace.

Bundelkund.—Most frequently among the poor, but it affects all classes. Deficient, or, probably still more, unsound articles of food.

The latter may account for the disease where the former, *i. e.*, deficient nourishment, cannot be the cause. It might be a point of inquiry whether there is any connexion or parallelism of cause between leprosy in its gangrenous or other forms and the diseases, including gangrene of the extremities, produced by the use of diseased grain, such as "ergot."

Interrogatory VII.

Augur.—Everything tending to impair or lower the vital powers would be likely to do so.

Bundelkund.—Aggravation of original causes.

Interrogatory VIII.

Augur.—Leprosy appears to be hereditary, but only in a slight degree.

I have known many instances where only one member of a family has been affected with leprosy, and several, where the father or mother of a family suffered from the disease, their children remaining free from it.

Nimar.—The disease in several cases would seem to be hereditary; in 14 per cent. of cases parents or grandparents are said to have suffered from it. The cases in which the disease has passed over a generation appear almost as numerous as those in which the parents have had it.

I have known many such instances.

Interrogatory IX.

Indore.—I am of opinion that leprosy is very often (to say the least) dependent on or connected with syphilis.

I beg to state that this inquiry into leprosy should be compared, with regard to its results, with those that might accrue from a similar investigation into the subject of "cretinism," and of the so-called "pellagra" of the Italian peninsula, and also of the subject of elephantiasis (a disease I have never seen in Central India).

Augur.—I have no reason to believe so.

Nimar.—No.

Gwalior.—I should think it was quite a distinct disease from syphilis or the yaws; it may have some connexion with scrofula.

Interrogatory X.

Indore.—No.

c. I have no such belief myself.

Augur.—I have never met with an instance.

Nimar.—No such instance has been seen by me.

Gwalior.—I have not seen any contagious cases.

Interrogatories XI., XII., XIII., XIV.

Throughout Central India there are—

No restrictions or segregation.
No public provision.
None.*
No reason to believe in the increase or decrease of the disease.

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* If lepers seek advice, which they seldom do, they are admitted into a public dispensary belonging to the Rajah of Gwalior.

Interrogatory XV.

Augur.—As lepers suffer but little inconvenience from the disease in its early stage, they then rarely submit to treatment for any length of time, and when anæsthesia has become extensive treatment is of little avail. But two cases of leprosy in an early stage, which I treated with a combination of arsenic, iodine, and iodide of potassium, both recovered perfectly; in one case the first prescribed form of eruption had existed for a year without any further symptoms; in the other there were several large patches of anæsthesia on the extremities, and in one of these patches ulceration had just began. In the town of Augur there are at present three cases which have undergone spontaneous cure; one has lost three fingers, another one finger, the third had ulceration of mucous membrane of the nose, destruction of the bones, and flattening of that organ. I remember having seen another case in which spontaneous cure had taken place after the loss of the greater part of the fingers, all the toes, and part of one foot.

Bundelkund.—Great temporary improvement is generally observed from general tonic and local stimulating treatment, but no complete cures observed. This refers to the treatment found to answer best in asthenic cases, which alone have come under my observation.

Interrogatory XVI.

Indore.—In December 1849 a census of the population of Indore was taken, and the following information elicited:—

Number of houses		14,482
Population	Males, adult	28,116
	Females	23,084
	Boys	8,375
	Girls	6,002
		65,577 souls.

No registration of births or of deaths exists in Indore city.

Nimar.—The population of Nimar was estimated at 199,381 by a census taken in 1862.

There is no registration of births and deaths.

Interrogatory XVII.

Nimar.—The total number of lepers in the entire province of Nimar is above 300. For this and other information, to enable me to reply to the above interrogatories, I have to acknowledge the kind aid and courtesy of the political agent in Nimar.

In conclusion, I beg to offer a few observations which bear in some degree upon the subject.

There is a village in Nimar, Lonee by name, with a population of about 1,500 souls, of which number 16 are lepers (there are said to have been 40 ten years ago). No new cases occur to fill up the gaps in the figures as the old ones die off. This village presents nothing as to site, &c. to account for the extraordinary proportion of lepers in it; it is on the same level with and close to other villages which are exempt from the disease.

The lepers are not a banned class, since they usually live with the healthy, although they are required to prepare and eat their own food apart; they seem to be pitied as persons who are paying the penalty of sin, especially of incest, committed in former states of existence.

There is certainly nothing Mosaic in the view the natives take of the disease, and in their treatment of the sufferers from it.

A few look upon leprosy as a judgment for sin done in this life; *e. g.*, one man said he kicked an idol, and was struck with the disease in the course of the following month.

VI. CENTRAL PROVINCES.

Interrogatory I.

Nagpore.—Leprosy is known at (city of) Nagpore. There are three different forms of it, viz., the white, anæsthetic, and tubercular.

Among the Mahomedans the general name of leprosy is jesum, while the Mahratta term is kod (pronounced kord) or kusht (pronounced koosht). The latter name in its simple form is applied to the white leprosy, and with the epithet of maha, or great, is given to what the natives term black leprosy, from the light brown skin becoming of a darker hue. They recognize two varieties of the maha khoost; one answering to the anæsthetic is named sun baheri (soonbheiri), and the other (reckoned the worst) is known here by the name of raktpiti (rucktpectic), corresponding with the tubercular form. In my opinion, these several forms are only varieties of one common morbid state or dyscrasis akin to that which occurs in scrofula or cretinism, and probably connected with defective nutrition and neglect of hygienic laws.

Interrogatory II.

In the white leprosy four were born so, viz., one male and three females; no hereditary taint being acknowledged. The youngest age at which it appeared after birth was three in a boy, in whom it was hereditary on the father's side; the latter having been affected at 15, while he averred his parents were free from it. The oldest was 75. Arranging them in quinquennial periods, the age at which the disease generally manifested itself will be seen from the following table:—

Sex.	At birth.	From 1 to 5 years.	5 „ 10 „	10 „ 15 „	15 „ 20 „	20 „ 25 „	25 „ 30 „	30 „ 35 „	35 „ 40 „	40 „ 45 „	45 „ 50 „	50 „ 55 „	55 „ 60 „	60 „ 65 „	65 „ 70 „	70 „ 75 „	75 „ 80 „	Total.
Male - -	1	2	4	2	2	1	2	2	1	3	2	–	1	–	2	–	1	26
Female -	3	–	–	1	1	1	1	–	2	1	2	1	–	–	–	1	–	14
Total -	4	2	4	3	3	2	3	2	3	4	4	1	1	–	2	1	1	40

In the anæsthetic and tubercular forms, one, a male, was born so, and denied an hereditary taint; in the youngest, a male, it began at five, in a brother at seven, and the father, who was dead, had suffered from the disease; the eldest, a male, was 68; no hereditary taint being confessed. The ages were as follows:

Sex.	At birth.	From 1 to 5 years.	5 „ 10 „	10 „ 15 „	15 „ 20 „	20 „ 25 „	25 „ 30 „	30 „ 35 „	35 „ 40 „	40 „ 45 „	45 „ 50 „	50 „ 55 „	55 „ 60 „	60 „ 65 „	65 „ 70 „	70 „ 75 „	75 „ 80 „	Total.
Male - -	1	2	13	19	31	22	19	15	11	7	7	4	1	–	1	–	–	153
Female -	–	1	8	10	6	6	10	7	7	6	5	5	2	1	1	–	–	75
Total -	1	3	21	29	37	28	29	22	18	13	12	9	3	1	2	–	–	228

Interrogatory III.

Judging from the ages of those examined, I should infer that, in the anæsthetic and tubercular varieties, the period of life at which the disease usually attains its full development is from 20 to 40 years; and that, in the great majority, the time required ranges from 1 to 15 years.

Of those who die, many fall victims to chest and bowel complaints (to which they are liable), sink from exhaustion (in some the result of large abscesses), or commit suicide, which, considering their miserable condition, is not to be wondered at.

Death is sometimes suicidal, as appears from the following statement communicated to Dr. Hende by the Rev. S. Hislop of the Free Church Mission at Nagpore:

"In general the disease is regarded as wholly incurable, and the poor sufferers, with their own consent, had frequently their existence shortened by being drowned or buried alive. I have heard several cases of the latter practice that occurred while Sir Richard Jenkins was resident. About 1819 a woman of the cultivator caste, about 45 years of age, in holiday attire, and with a garland of flowers hanging from her neck, was conducted out of the city with music, to a spot near the present bridge on the Paldi road. There she sat down till her relatives dug a pit six feet deep, with a recess on one side. The work finished, she blessed the spectators, and descending into the pit took her seat in the recess, which was then closed with a bamboo mat, the earth was then filled in, the people on the surface gave a loud shout which was said to be answered by a feeble cry from below, and the crowd dispersed."

Interrogatory IV.

Of those examined by me, the number of males was double that of females.

Interrogatory V.

All the cases I have met with have been in natives.

The following table shows their distribution among the different castes:—

Description.	Sex.	
	Males.	Females.
Tubercular and Anæsthetic.		
Brahmins	8	2
Hindoos	111	54
Mahomedans	19	9
Dhers, or low-caste Hindoos	15	10
Total	153	75
White Leprosy.		
Brahmins	3	—
Hindoos	21	13
Mahomedans	—	1
Dhers, or low-caste Hindoos	2	—
Total	26	14

Interrogatory VI.

No class or caste are exempt from it, and when well established its effects are alike in both, though its victims are most frequently found among the poor and needy.

a. The city of Nagpore is situated inland, 900 feet above the level of the sea, and 500 miles from the nearest point. The city is low, swampy, badly drained, and malarial fevers prevail in it and the surrounding district, which is higher, undulating, and cultivated.

b. The sanitary condition of the dwellings and of their immediate neighbourhood is bad, with few exceptions.

c. Excepting the Brahmins and the more wealthy members of the Soodra caste, the people generally are neglectful of personal cleanliness.

d. The food of all classes of Hindoos is very much the same. The majority here take meat whenever their means allow them, though the poorer classes can seldom get it; while the Brahmins entirely abstain, partaking, however, largely of milk, ghee, and sugar. The diet among the Mahomedans is much the same as that of the Hindoos, excepting that they eat more meat. Betel nut, tobacco, opium, and ganja, and intoxicating drinks, are more or less indulged in.

Interrogatory VII.

From the majority of the cases occurring among the poorer classes, it is probable that defective nourishment, insufficient clothing, want of personal cleanliness, and a neglect of hygienic laws, tend to aggravate the disease when once it has appeared; for, as a general rule, the poorer classes here are underfed, scantily clothed, and badly housed.

Interrogatory VIII.

Out of 228 cases of anæsthetic and tubercular leprosy, it was stated or believed to be hereditary in 40, viz., 23 males and 17 females.

In many instances the disease appears to be limited to one member only of a family.

As to the white leprosy, in only one out of 40 cases examined was it said to be hereditary.

Interrogatory IX.

Thirty-three of the patients, viz., 26 males and 7 females, out of the entire number, 228, ascribed their disease to syphilis; 14 males to syphilis and mercury; and 2 males to smallpox.

Though, as stated above, leprosy was ascribed by some to syphilis, yet the connexion between the two, as cause and effect, when inquired into, was by no means evident; and the same remark applies equally to the supposed influence of mercury; for while some averred that, prior to the disease appearing, they had suffered from the ill effects of syphilis, or mercury, or both, others stated the contrary, and that they took mercury in hopes of being cured.

I would observe that the native hakeems constantly prescribe mercury for all kinds of diseases (often to salivation), and that if mercury had the effect ascribed to it, leprosy should be more common than it is.

Interrogatory X.

During the nine years I have held charge of the Nagpore gaol, with a daily average of 500 prisoners, all of whom freely intermingled, and some of whom when imprisoned were lepers, I have never known an instance of contagion, and the reply to Interrogatory XI. tends to confirm the same.

As far as I could ascertain, the disease does not seem transmissible by sexual intercourse.

Interrogatories XI., XII., XIII., XIV.

Yes.
No public provision.
None.
No data to answer this.

Interrogatory XV.

I have observed none; for though by cleanliness and better diet the sores may heal, the patient's health improve, and their sufferings for a time be somewhat alleviated, yet there is no real check to the disease. To my knowledge leprosy never undergoes a spontaneous cure.

Interrogatory XVI.

Since the late Rajah's death, the population of the city of Nagpore is said to have decreased, and the estimates of it vary from 120 to 80 thousand. No census of the native population has been taken.

Interrogatory XVII.

Dr. Hende adverts to the great difficulty of obtaining reliable statistical data from the natives, partly because the people cannot understand them, and yet more because they are alarmed at them, fearing that they may be preparatory to another turn of the financial screw, or that they may lead to the withdrawal of some cherished caste privilege or custom, or have some other future object in view.

That this is not an imaginary idea, I may state that when it became known that the inquiry was to be instituted, nearly 200 lepers at once left the city, in consequence of a malicious report having been spread, that, as some prisoners were about to be transported from this beyond sea, the Government wished to catch all lepers and ship them off by the same opportunity.

Of the prevalence of the disease in the eight districts of which the Nagpore division consists, he failed to obtain information, and his replies have reference therefore to the city of Nagpore alone.

Four hundred and eighty cases of leprosy were entered in the City Superintendent's list, viz., males 293, females 147; of these I inspected 243, viz., males 161, females 82, rejecting 8 males and 7 females as unaffected; there remained 228, viz., males 153, females 75, suffering from the tuberculated and anæsthetic varieties of the disease. In addition to these, I also examined 40 cases of white leprosy, viz., males 26 and females 14.

The officiating Chief Commissioner of the Central Provinces, in transmitting Dr. Hende's report to the Governor-General, states that he "will endeavour to "establish a leper asylum at Nagpore, and, if he should be successful in it, he will "submit a further report thereon."

VII. HYDERABAD (DECCAN).

Interrogatory I.

Leprosy is known in the city of Hyderabad and in its immediate vicinity.

a. Two different forms occur, known respectively as anæsthetic and tubercular leprosy.

b. These are, in my opinion, only varieties of one morbid condition.

c. Anæsthetic.—Loss of colour or patches of skin (native) with insensibility of skin so affected; interstitial absorption of tissues; local ulcerations; occurrence of various chronic cutaneous disorders.

Tubercular.—Tubercles or bronzed patches of skin of face, ears, &c.; thickening of ends of fingers; falling out of hair. Breaking down of tubercles; subsequent ulceration; chronic cutaneous disorders.

Interrogatory II.

Most common in adults; the anæsthetic form seen in a child of eight.

Interrogatory III.

Progress very un-uniform. Lepers appear to live to good old age, unless other diseases supervene.

Interrogatory IV.

Seldom seen in females.

Interrogatory V.

Only among the native (black) population.

Interrogatory VI.

Most common among the poor, but has been seen in the higher classes also.

a. Inland, elevated, and dry.

b. Sanitary condition of dwellings and neighbourhood very bad.

Interrogatory VIII.

Appears to be often hereditary.

Interrogatory IX.

Believed to have some obscure connexion with syphilis.

Interrogatory X.

No.

Interrogatory XI.

No restrictions.

Interrogatories XII. and XIII.

None.

Interrogatory XIV.

Believed to be on the increase about Hyderabad; no cause known for this.

Interrogatory XVII.

No reliable information to offer. Disease is tedious. Patients present themselves for treatment for a time, but result in most cases unknown, from failing to attend.

VIII. MYSORE.

Interrogatory I.

Bangalore.—Leprosy (elephantiasis Græcorum) is a common disease among all classes of the native community at Bangalore and throughout the Mysore territory, and is known by the names of "kooshtum," or "kooshta rogum." White leprosy, or leuce, is known by the name of "billay" (*i.e.*, white) "kooshtum." The ordinarily distinguished varieties of tubercular and anæsthetic leprosy are, I am inclined to think, one and the same disease; for though in one leper one class of symptoms may be almost exclusively developed, and in another a different set, still cases are not uncommon in which both the anæsthetic and tubercular symptoms are more or less combined. Lesion of sensation, associated with some affection of the skin, is, in my opinion, the most constant symptom of leprosy, and may, indeed, be considered pathognomonic; for though in some cases there may be tenderness or pain, yet in every case there is also some degree of numbness and insensibility to ordinary impressions on the skin.

The tubercular form of the disease is very generally accompanied by a squamous, scabby state of the skin, but particularly of the extremities. In some cases of this form of leprosy the disease commences and is characterized principally by a severe chronic eczematous mange-like condition of the skin generally, but more especially affecting the usual sites of scabies, or about the flexures of the joints between the fingers, &c.; and indeed cases of this kind seem almost either induced by or are much aggravated by scabies in a virulent form, and may be relieved to a considerable extent by a treatment appropriate for scabies. The diagnosis of leprosy from obstinate chronic eczema merely is, in some such cases only, determinable by the co-existence in the leprous cases of lesion of sensation.

In the anæsthetic form, sensation is generally from the commencement lost or much impaired in the parts of the skin so affected. After these patches have existed for some time, even two years, but sometimes almost coincidently, and sometimes also without them, a blister arises on the skin of a toe or a finger, or some other part of the hands or feet, and a sore follows, which generally penetrates deeply, seeming like a hole punched in the part, and often reaches to and implicates the bones, which become necrosed and are thrown out.

White leprosy, or leuce, is certainly an entirely distinct disease from leprosy proper, though I have met with a few instances which induce me to think the two diseases occasionally co-exist in the same person.

White lepers suffer like albinos much from sun burning, their skin getting readily scorched and blistered by exposure to the sun's rays. Sensation remains unimpaired in the parts of the skin which are decolourized. I have seen no sufficient instances to induce me to think that any one of these forms of leuce progresses into the other.

Interrogatory II.

It most commonly manifests itself in adults of middle age, but sometimes it shows itself in very young children. Thus I have seen children of 5, 7, and 12 years of age affected with it, and sometimes the first symptoms are only shown at an advanced age.

In the tubercular form, the symptoms usually commence with heat, itching, and tingling of the face or hands or feet, the skin of which, particularly of the eyebrows, cheeks, about the alæ of the nose and the lobes of the ears, becomes thickened and rough and scabby, or thickened or glistening in patches, which have generally a lighter or more copper coloured hue than the rest of the skin. The skin on the backs of the hands and feet and their phalanges becomes similarly affected, and the thickening of it causes the finger and toes to assume a tapering form, while the nails become incurved, or oftener the fingers and toes become thick and club-shaped, and the nails cease to grow, and become stunted, rough, and brittle. In some cases at this stage of the complaint the sufferer complains of tenderness and pain of the feet, but in most the sensitiveness of these parts is impaired, and the skin is rough and cracked.

In the anæsthetic form, the symptoms often commence with the appearance of somewhat circular patches, most frequently on the skin of the buttocks, thighs, shoulders, or outside of the limbs, which are of a lighter colour than the rest of the skin, are seldom raised above the general level, and are generally smooth, or curried only with a very slight furfuraceous state of the cuticle; but in some few case these patches are surrounded with a raised margin, covered with small scales, and in such instances the appearances are very similar to those of slight psoriasis.

Interrogatory III.

The disease is generally slow in its course, and the sufferers are affected for many years. Usually, however, it greatly abbreviates the natural term of life, and proves fatal in from 2 to 10 years.

Interrogatory IV.

Appears to be considerably more frequent in men.

Interrogatory V.

At Bangalore the disease is confined almost exclusively to the native and coloured races, and it is comparetively rare among the latter. I have only observed two instances of it in Europeans, in one of whom the tubercular form was developed when an elderly man. In the other, who was a young man, but born and bred in the country, the disease was of the anæsthetic or ulcerative variety.

Mussulmans seem as liable to it as the Hindoo.

Interrogatory VI.

No castes of the native community seem exempt from the disease. I have met with many instances of it among the Brahmins, both male and female, whose habits of personal cleanliness are most scrupulous; but I think it is more common still among the lowest classes of the native community, with whom impurity of living in every respect is the normal condition.

a. The country round Bangalore is an elevated, comparatively treeless, plateau, about 3,000 feet above the sea, and 200 miles distant from the coasts. It is very undulating, and the only collections of water (which, however, are numerous,) are those artificially formed by throwing embankments across the valleys. The grounds below these banks are, during part of the year, kept inundated for the cultivation of rice, but there are no natural permanent swamps. The soil of the district is generally red coloured, porous, fertile, and is principally cultivated with rice and sugarcane where it can be inundated, and with other cereals where irrigation cannot be effected.

d. The Brahmins, and some of the other higher castes of Hindoos in Mysore, eat no kind of flesh, but in addition to the staple of rice consume dâl (citisus cajan) and other pulses largely, and as much ghee (*i.e.*, melted butter) and preparations of milk as their means will permit. The lower class of Hindoos live principally upon ragee (cynosurus coracanus),* and pulses, and eat animal food as often as they can get it, which, however, is rarely. The Mussulmans, according to their means, live pretty much on the same diet as the Hindoos, that is, the staple article of their diet is rice or

* Eleusine coracana, *Gaert.*

ragee, and they eat animal food, with the exception of hog's flesh, as often as they can afford it. Fish, salt or fresh, is scarce in Mysore.

Interrogatory VIII.

It is the common opinion among the natives here that the disease is often hereditary, and the belief seems to me well founded.

On the other hand, instances have been known to me of one member of a family being leprous, while the rest were free from taint.

Interrogatory IX.

The belief is common amongst the natives that leprosy is a form or development of venereal disease, and particularly those forms of it which commence with squamous or furfuraceous patches of the skin, and that form of white leprosy which is marked by decolouration of the palms and soles.

Some cases of tubercular leprosy have a great resemblance to secondary syphilis, particularly those in which the bones of the nose and the fauces are affected. It is only in the tubercular form that I have noticed that the bones of the nose are destroyed.

Interrogatory X.

I have known instances of a wife living in cohabitation with a leprous husband, and of the servants of the leper asylum living employed for years among its inmates, without contracting the disease.

Interrogatory XI.

The Government in this part of India imposes no restrictions upon lepers; but those received into the leper asylum are only allowed one day a week of liberty, to prevent their roaming as beggars over the cantonment of Bangalore. I believe that generally lepers live as usual with their families till the progress of their disease renders them very loathsome, when, frequently, they are extruded from their homes, and left to live, or rather starve, by begging. This is the common fate of lepers of the poorer classes, and the applicants for admission into the asylum are of the latter class only.

Interrogatory XII.

An asylum for the leprous poor of the cantonment and pettah of Bangalore was built under the directions of the late Sir Mark Cubbon in the year 1845, and this having been found inadequate and badly situated, a new asylum was built in 1857. Only those whose disease is far advanced are admitted into it, and it has been intended more as a place of refuge for them than as an hospital for their cure. It consists of 32 rooms, 12 feet by 8 feet, and 8 feet high, and all of them are occupied, in a few instances by married couples of lepers, and thus the number of inmates, amounting on an average to 33 or 34, often exceeds the number of rooms. Most of the inmates do not desire any further medical treatment than merely some salve for their sores, or oleaginous embrocations for the eczema.

At the end of 1853 there were 39 in the asylum, and during the following 9 years 119 lepers (all bad cases) were admitted.

To each inmate a sufficient ration of food is allowed, and also of clothes. Water is brought in by a water-carrier, and a sweeper is employed to keep the premises and privy clean. Medical aid when required is afforded from the civil hospital, which is situated close at hand. The institution is visited regularly once a week, or oftener when necessary, by the medical officer of the Mysore commission, to see that all is going on correctly. He also admits all the inmates.

At the civil hospital in Bangalore, all lepers who have applied for treatment have received it; and from 1853 to 1862, inclusive, 73 cases were treated as in-patients and 45 out-patients, besides 16 cases which have been entered in the registers as lepra simply, but who were probably lepers. I consider, however, that these figures give no idea of the prevalence of the disease, and that the people generally are so convinced of the inutility of treatment that not one leper in five presents himself at the hospitals.

Interrogatory XIII.

The usual number of lepers maintained in the asylum is about 33 to 34, and the relief is meant to be confined to lepers belonging to Bangalore and its immediate

vicinity. The numerous lepers all over the Mysore country are unprovided for by the Government, and must be maintained either on their private means or by the charity of their neighbours.

Interrogatory XIV.

Though during the last 10 years whilst I have been surgeon to the Mysore commission, and stationed at Bangalore, my opportunities of observation have been considerable, I have not remarked any decided difference in the frequency of the disease; but a Hindoo Pundit has informed me he has noticed that leprosy has been considerably more common within the last 20 years.

Interrogatory XV.

I have never observed a cure of the disease, and my attempts to benefit the tubercular variety by means of arsenic and madar (Calotropis gigantea), Donovan's solution, &c., have been rather the reverse of successful; one patient, a young lad, in particular, having very considerably improved in vigour after my treatment was discontinued; but, on the other hand, I have seen treatment very decidedly useful in removing the dartrous or eczematous eruptions which often affect the leper's skin, and in the ulcerations of the hands and feet the ordinary local applications for sores often do temporary good and favour cicatrization. From the nature and situation of these sores, cerates of the resinous kinds are the best and most convenient applications. I have used the Hydrocotyle asiatica and madar internally in many cases of leprosy, and seen no benefit therefrom, except to the eczematous state of the skin; and I have also used cantharides to improve the state of the skin, with some good effect. Sulphurous applications to the skin are also at times useful. Medicated tepid and vapour baths would probably be beneficial. But, though the skin may be improved temporarily, the general condition of cachexia and the anæsthesia have not been in the least influenced, and I have seen fresh tubercules and sores form whilst treatment was being continued.

Interrogatory XVI.

The estimated population of Bangalore and its environs, from which almost all the lepers come who have been under my observation, is about 250,000. Registration of deaths has only been recently begun.

Interrogatory XVII.

I have no information to give in reply to the first part of this query. On its second, I have been able to come to no other conclusion than that the disease is hereditary, and, not improbably, communicable by long-continued and intimate personal intercourse, whilst the bad hygienic condition of the towns and villages generally and bad nourishment favour its spread, just as they do other conditions of bad health. I am not aware of any previous report on leprosy at this station having been made.

IX. NIPAL.

Interrogatory I.

Khatmandoo.—Leprosy is common throughout Nipal, and is met with in three different forms, all of which are known under the same name of "core," or sometimes of "maharogue." These three forms are, 1st, lepra vulgaris; in its early stages it has the same general appearance as it exhibits in Europe, but the patches on the skin are more livid, and, as the disease advances, it is marked by a great tendency to swelling of the integuments and ulceration and sloughing of the nose and lips, as well as of the smaller joints of the hands and feet. 2, lepra alphoides, marked by the whiteness and scaliness of the cutaneous eruption, and by its slow chronic character, and its tendency to terminate in drying up, rather than in swelling and sloughing of the extremities. In its later stages it is often accompanied by loss of sensation in the skin, and by partial paralysis of the affected limbs. 3rd, lepra syphilitica, which is met with when either of the above forms is modified by the presence of syphilis. It is apt to occur either in

consequence of lepra becoming developed in a system already broken down by syphilis, and in too many cases saturated with mercury, or in consequence of syphilis occurring in a person already affected by, or having a strong constitutional tendency to, lepra. In either case the leprosy thus complicated with syphilis is apt to assume a very severe and malignant character.

In my opinion these three forms are merely varieties of one common morbid state, and are not specifically distinct diseases.*

Interrogatory II.

I have seldom met with it in subjects under the age of puberty. The earliest symptoms usually observed are the appearance on the limbs, and sometimes on the lips and nose, of distinctly marked blotches, covered by desquamating cuticle, and more or less livid or white in colour, according as they partake of the characters of the 1st or 2nd variety. These gradually extend from the limbs to the trunk.

Interrogatory III.

I have no accurate data on this point, but I believe that the full development of the disease is most usually attained at from 30 to 40 years of age, and that the same period of life is that in which it is most generally fatal.

Interrogatory IV.

It is as common in one sex as in the other; but as women, when affected by this disease, usually keep themselves more secluded than the men do, it is not so common to see leprous women as leprous men in the public streets.

Interrogatory V.

Among the native races of the country it is equally common to all.

Interrogatory VI and VII.

The circumstances apparently most favorable to its development, and which seem to aggravate the disease when once established, are all such causes as tend to impoverish the blood and lower the state of the health generally; such as bad food, insufficient clothing; damp, dirty, and ill-ventilated dwellings; personal uncleanliness; to which may be added constitutional tendency to it, and a system broken down by syphilis and the imprudent use of mercury; most of which conditions are nearly universal among the poorer classes in Nipal.

Interrogatory VIII.

The disease often appears to be hereditary. I have heard that such cases as those referred to are not unfrequent here.

Interrogatory IX.

I do not believe that syphilis, except in cases where there is a decided constitutional or inherited tendency to leprosy, has anything to do with its development; although syphilitic eruptions, in Nipal as elsewhere, often assume a decidedly leprous character.

Interrogatory X.

Never.
c. No.

Interrogatory XI.

There are no regular laws or restrictions in Nipal as to lepers; but as the disease is universally believed to be contagious as well as incurable, any person afflicted with it at all severely is shunned by the rest of the community.

As the police will not allow them to live as beggars inside the towns, for fear of

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* Dr. Oldfield remarks that his experience of the disease in Nipal is confined to the cases he had seen within the very narrow limits of the valley of Nipal, in which valley the capital, Khatmandoo, and the British Residency, are situated, and beyond which limits Europeans are not allowed to travel.

their polluting the rest of the community, they are driven to reside in suburbs, or in any place outside the cities, where they gain a scanty and precarious livelihood by begging.

Interrogatories XII and XIII.

None.

Interrogatory XIV.

No data to form an opinion.

Interrogatory XV.

In the early stages of the disease, before swelling and ulceration of the integuments have taken place, I have seen many cases apparently cured by the continued use either of arsenic in small doses combined with potash, or of the ferruginous tonics, especially the sulphate and iodide of iron, strict attention being at the same time paid to all means likely to improve the blood and strengthen the general health. In old and confirmed cases I do not believe that the disease is amenable to any medical treatment.

Of the three varieties of leprosy, the syphilitic is by far the most amenable to medical treatment, and when promptly and judiously treated often admits of a perfect cure. In such cases mercury in any form does more harm than good. I have seen many instances in which the disease has been greatly aggravated, and the most frightful sloughing induced, by the indiscriminate and profuse administration of mercury by native practitioners. In all these cases hydriodate of potash is the proper medicine to employ, and I have often used it with the greatest advantage. The natives of the country believe that animal food, as well as salt, pepper, and any spices which are eaten in a dry state, should be avoided by all persons affected with leprosy; and they recommend the free use of milk, a very sparing use of rice, and only such condiments as ginger or other spices as require to be cooked before they are eaten.

Interrogatory XVI.

The population of the kingdom of Nipal may be roughly estimated at about two millions, and that of the valley of Nipal is perhaps amounting to a quarter of a million.

Interrogatory XVII.

Dr. Coates, civil surgeon at Chumparun, remarks in his report:—

Jhowani Kuchehri, in the Nipal Terai bordering on this district, has been reported to me as containing several villages where leprosy is the rule, every one having it at some period of his life to a greater or less extent. I have not been able to get there, as the rajah has lately forbad strangers to enter the Terai; but I am told that these villages are not situated on the hill rivers. The men are rice planters, live badly, and drink much spirit.

X.—ASSAM.

Interrogatory I.

Durrung.—Leprosy is known in the district of Durrung, Assam, but is not common; it has been recognized in one of its forms only, lepra mutilans. The early stages have not been seen; in the advanced stage ulcerations on the hand and feet, destroying the fingers and toes; very slow in their progress; sometimes healing spontaneously, but liable to break out again.

Interrogatory II.

In adult age. Earliest symptoms said to be the appearance of "blister-like elevations of the cuticle."

Interrogatory VI.

In the poorer classes; in rural low malarial parts; the dwellings clean, but situated in dense jungle; habits dirty. Ordinary diet, vegetable chiefly, with fish occasionally. The people are temperate. Occupation, agriculture.

Interrogatory XVI.

Estimated population, 186,692; no census.

XI.—BRITISH BURMAH.

Interrogatory I.

Kyouk Phyoo.—Leprosy is known in the district of Ramree. It occurs here in two different forms.

a. These two forms of the diseases are called by the natives by the names of "noona" and "tona," answering to what may be termed by us the benign and the malignant.

b. These two forms appear to me to be varieties of one common morbid state.

c. The obvious and distinguishing characteristics of the leprosy called "noona," or the benign, are simply white patches without any sores or ulcers, lasting to the end of life, without any great discomfort or suffering in general health of the person afflicted. The patches appear chiefly in the hands, face, neck, the inner parts of the lips, about the scrotum and the soles of the feet, and if any hair grow in these affected parts it generally falls off, and the parts themselves are characterized by a burning heat, numbness, and insensibility.

The other form, called the "tona," or the malignant variety, commences with blotches about the face, a thickening of the lobes of the ears, reddening of parts before breaking out of sores therein. The destruction of tissues, discharging sanious thin matter; the falling off of the hairs of the head and of the other parts of the body; the swelling and tumefaction of the skin of the hands and feet; and the work of destruction thus goes on slowly but surely till death closes the scene.

Akyab.—Though leprosy is well known in the town and district of Akyab, it seems to be confined for the most part to natives of Bengal who have immigrated hither.

a. But though it is acknowledgedly rare among the omnivorous native-born population of the place, it is sufficiently well known by them to have received names distinctive of various forms or outward manifestations of it, as—

Toona or miring, koor of the Hindoos, lepra nigricans.
Anoor or ngona, dhubbal ,, alphoides.
Goda ,, ,, ,, elephantiasis or lepra tuberculosa
Kooranda ,, ,, ,, ,, of scrotum.

The more obvious characters of the white leprosy (leper alphoides) are thus stated:—It is distinguishable by the white smooth patches of apparently healthy skin which discolour its naturally dark hue in the races most liable to it.

The subjects of this disease have a piebald appearance, the white patches appearing whiter by contrast, or, as happens in some not very numerous cases, the whole skin is denuded of its dark pigment, and presents a similar appearance to that of Europeans.

Loss of colour and impaired sensibility of the part affected are the distinguishing characteristics of this form of leprosy.

Moulmein.

a. There are two forms of leprosy, called in Tamil and Telugu "coostoo;" Hindostanee, "juzam;" and Burmese, "noona."

b. These two forms are only varieties of one common morbid state.

Interrogatory II.

Akyab.—The earlier symptoms are well described by Doctor J. Robinson, Superintendent of the Insane Hospital at Calcutta, in the Medical Chirurgical Transactions, Vol. X.

One or two circumscribed spots appear upon the skin (generally upon the hands or feet, but sometimes upon the trunks or face,) of a rather lighter colour than the

surrounding parts, neither raised nor depressed, shining and wrinkled, the furrows not coinciding with the lines of the contiguous sound cuticle. These patches are insensible even to a hot iron; they spread slowly until the skin of the legs, arms, and of the whole body is completely involved and deprived of sensibility.

The disease in short is characterised from first to last by defective vital action. The sensibility of the part affected by it is first lost, then its function, and subsequently it is thrown off piecemeal, but completely without pain or inflammation, but by a process of local dissolution limited perhaps to a finger or a toe, or to a single phalanx of either, or it may be to a portion of the skin and integument.

Kyouk Phyoo.—Leprosy does not appear to show itself at an early age. It is generally observable at the age of 19 or 20, and upwards.

Interrogatory III.

Akyab.—The time occupied by the full development of the disease varies from a few months to many years, and the age at which it first breaks out is, I think, generally between 20 and 30; its duration, after full development, varies greatly likewise.

Some affected with it drag on a miserable existence, crippled in every limb, until old age; and ultimately fall victims to some other malady. Indeed, I think, such is the rule. I do not regard it as frequently fatal directly; and though it undoubtedly shortens life, it does so generally by making its victims more susceptible to other diseases and less capable of withstanding them; it is never, I think, fatal in less than two years.

Moulmein.—It is more frequent in males.

Kyouk Phyoo.—Leprosy is of rare occurrence in this district. I have never seen a leprous woman here, during my experience of 15 years. I have seen, however, a few men with the disease, but that was of the benign kind.

Akyab.—It appears to be more frequent in males than in females, in the proportion of three to one.

Interrogatories IV. and V.

Akyab.—A hundred times more common among blacks than in coloured people.

Much more frequent among coloured people with European blood in their veins than among the whites of pure blood.

Moulmein.—Among the poor.

Bad feeding, undue exposure, insufficient clothing, and bad dwellings are predisposing causes.

d. The ordinary diet and general way of living is indifferent, unwholesome, and insufficient.

Kyouk Phyoo.—Among the circumstances favouring its development are—

d. Poor food in general, but particularly a variety of pulse or dâll of a diseased kind, also the flesh of dead animals, often putrid.

e. The people most subject to this disease are the "Chumars," the "Doules," and the "Hurguria," their occupation being the tanning of leather, making shoes, scavengers, and all sorts of dirty and filthy works.

Interrogatory VI.

Akyab.—The poorer classes, who are decidedly the greatest sufferers from the disease, use both tank and river water for drinking as well as for bathing long after it has become, by its foul appearance and odour, an abomination to the senses of the more delicately constituted European.

d. Their ordinary diet is rice and dâll, vegetables, spices, and oil or ghee, a sort of butter made from buffalo's milk, and fish; no meat, except goat's flesh, and that they partake of sparingly and seldom.

They dwell in huts made of bamboo and leaves, which are impervious to rain, and unexceptionable as regards ventilation, since, though the windows are few and small, they are unglazed, and the walls being of mats permit free circulation of air throughout the dwellings. The floors are of mud, beaten into a plaster, laid smooth, and raised from the ground two or three feet.

They are fond of anointing one another with mustard oil, and seem to economise clothing by the practice.

Interrogatory VII.

Akyab.—The stigma which attaches to sufferers from this disease, and the depression of spirits arising therefrom, have, I have no doubt, much influence in aggravating their malady when once fairly and unmistakeably established. I have known lepers lie in one spot for months, hardly rising to take their food, under the influence of this feeling, and the supineness and torpidity which characterise the disease.

Moulmein.—Yes.

Interrogatory VIII.

Akyab.—That leprosy is hereditary is a belief universal in India. I have never heard a difference of opinion upon that point; but, though this is the generally received opinion even among lepers themselves, each always appears to believe that it has occurred by some unlucky accident in his own case.

Interrogatory IX.

Akyab.—The general opinion among the natives here is that the abuse of mercury is a frequent cause of leprosy, and I am disposed to think that the opinion is well founded. The value of the mineral as an antisyphilitic remedy is well known, and it is largely employed for the cure of venereal affections by these people. I think it very probable that both the mercurial and syphilitic poisons may induce a cachectic condition of system highly favourable to the development of leprosy, where the hereditary taint exists.

Interrogatory X.

Moulmein.—Never contagious.

Kyouk Phyoo.—I have never met with an instance.

c. I do not believe it to be transmissible by sexual intercourse. I knew a man, a confirmed leper, who was the superintendent of the Leper Asylum in Calcutta years ago, yet he was a married man, and his wife was perfectly free from the disease.

Akyab.—I have seen nothing to induce me to believe that leprosy is contagious, and I do not believe it is ever communicated in this way, nor even by sexual intercourse.

Interrogatory XI.

Akyab.—Legal restrictions upon the communication of lepers with the rest of the community are wholly unnecessary here, since persons suffering from the complaint are universally avoided, and generally subsist upon charity.

Moulmein.—Yes.

Kyouk Phyoo.—They are not permitted to communicate freely with the rest of the community, yet there is not much restriction employed in the case of the benign variety; the man, who is afflicted with the malignant variety, is kept separate, and not allowed to mix with people.

Interrogatory XII.

Moulmein.—None. They are treated at the civil and general dispensaries and hospitals in Burmah and India.

Interrogatory XIII.

Akyab.—No. They are not admitted into the general hospital.

Interrogatory XV.

Moulmein.—The disease is benefited by improved hygienic, dietetic, and medicinal treatment, viz.: attention to housing, food, clothing, cleanliness, and suitable medical treatment.

Akyab.—In anæsthetic leprosy I think I have seen the progress of the disease arrested by the employment of local stimulation, combined with the use of small doses of calomel and antimony internally for a considerable period; but the supineness and apathy of the subjects of this disease militate greatly against the efficacy of any treatment which does not go the length of regulating every action of the patient, in accordance with the strictest regard to diet, regimen, and habits of life.

The best local stimulant that I am acquainted with for the weak sloughing sores which mark the commencement of that breaking down of the tissues to which I have adverted in pointing out the essential characters of one form of leprosy (tona), and the best application also for giving to them some approach to reparative action, is the disinfectant known as Condy's fluid. I have seen this put a stop to their phagedenic character, and produce in a short time a crop of granulations sufficient to throw off the sloughs, when applied in an undiluted form, while at the same time the sensibility and general appearance of the surrounding integument has been much improved by the free use of the same remedy, diluted in the form of lotion, well rubbed in on the affected part where the surface remained unbroken.

Interrogatory XVIII.

Akyab.—I may mention a case which I operated upon at an indigo factory in the Nuddea district of Lower Bengal, and in which, on removing the affected part, the left lower extremity at the line of junction of the lower with the middle third of the tibia, no arterial hæmorrhage followed, and the stump healed kindly and rapidly without the application of a ligature. The arterial trunks divided anteriorly and posteriorly were, as blood-distributing agents of nutrition, to all intents and purposes obliterated; and the supply of nourishment having been cut off in this way, nature had removed toe after toe, and was engaged in removing the foot at the ankle joint, when I assisted her with the knife, by removing the useless and troublesome member a little higher up.

XII. STRAITS SETTLEMENTS.

Interrogatory I.

Singapore.—Leprosy is very common in the three stations of Penang, Malacca, and Singapore. Lepers exist in every village; chiefly in the higher towns, however.

It makes its appearance insidiously, generally preceded by more or less pyrexia and uneasy sensation about the parts, often as though ants were crawling beneath the skin; a dark coppery spot appears, sensibly raised above the skin, shining, and spreads rapidly, first, generally, on the face; the alæ nasi become much enlarged, the lobes of the ear also and the nipples, all presenting the same livid appearance; sometimes it attacks the fingers and toes; these ulcerate, and in nearly every case drop off. It frequently becomes arrested at the metarcarpus and metatarsus.

a. I have seen but what I consider one form of the disease, though, as I have stated above, at times it is attended with destructive ulceration. The Malays call the disease "kusta" and "sakit basar" (or great sickness).

Dr. McDougall (Bishop of Labuan) writes me, "I have seen several varieties of "the disease, but think them specifically the same disease, arising from the same "morbid cause."

Interrogatory II.

Malacca—Penang—Labuan.—It generally, as far as my observation goes, makes its appearance after puberty; but in the two cases, 5 and 7, I have annexed, it manifested itself long before that period; the female, No. 5, at eleven years of age, and the lad, No. 7, at ten years.

Dr. McDougall writes, "It generally manifests itself after puberty, I think; but I "have met with two cases, one a Dyak, the other a Chinese, with whom the disease "began in boyhood, and disabled them both before they were sixteen; one, the Dyak, "is partially recovered, with the loss of toes and fingers; the other, now about 20, "I do not think can survive much longer."

Interrogatory III.

Some cases are developed rapidly; others insidiously; many live for years, indeed to old age; in others, again, especially in those cases attended with extensive ulceration, the disease runs its course rapidly; the patient dying from sheer exhaustion, induced by the copious discharges.

Interrogatory IV.

Much more frequent in the male. I have only seen two cases in the female; one a Chinese woman, the other the girl described in Case 5.

Dr. McDougall writes, "I have seen only one case in a female who died of it about the age of 40; she was a Dyak Chinese."

Interrogatory V.

In these settlements the Chinese most frequently suffer from the disease; next the Malays. I have only seen one case amongst the Klings (natives from the Madras coast), and only one in a European, described in case 7.

Dr. McDougall writes, "In Sarawak, I think, the Chinese are more affected than either Dyaks or Malays; I have seen at least 50 or 60 cases in males of these races, but the greater number have been Chinese."

Interrogatory VI.

The lowest grade of society generally.

a. Living in low and ill ventilated huts, in situations where no attention is paid to the common rules of hygiene; most frequently urban, where the population is dense; the land low, and surrounded with filthy swamps.

b. I repeat, no attention is paid to this point, and the scavenger is never seen in their neighbourhood.

c. Dissipated in the extreme; no attention whatever is paid to personal cleanliness.

d. Diet is of the coarsest description.

e. Frequently mendicants; at times coolies and gardeners, who are always in an atmosphere depraved by the stench from human ordure, which they keep in open reservoirs for months, and then use it as manure.

Interrogatory VII.

Advanced age and bad unwholesome food, such as rats, cats, dogs, poultry that have died from disease, and such like. The poorer classes of Chinese will almost eat carrion.

Dr. McDougall writes, "Mature age and bad living."

Interrogatory VIII.

I have never known it to be so in a single instance; I have known only one member of the family affected with the disease, the others remaining without a trace of it.

Dr. McDougall writes in reply, Interrogatory No. VIII., "Hereditary."

Interrogatory IX.

I have never been able to trace leprosy to a syphilitic origin.

Dr. McDougall writes, "I do not think it connected with syphilis."

Interrogatory X.

I have met with three cases in which I can with certainty state the disease was contracted by continued and direct contagion; two cases specified under *b*, and one specified in Case 6,* the details of which are given below.

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* *W. E.; ætat.* 11; male, European; spare habit of body, light hair, gray eyes, swarthy complexion.

Present state.—26th March 1864.—Has several well defined, livid, circular patches on the face, arms, and legs (particularly chin and cheeks), the body being comparatively free; integument slightly raised, scaly, and shining; lobes of both ears enlarged, as also *alæ nasi* and both nipples; a feeling of tightness experienced on flexing fingers; complains of a creeping sensation in affected parts, otherwise feels very well; appetite good; bowels moved twice or thrice daily; sleeps well; skin, rough and dry.

History, &c.—Step-father states that to his knowledge the disease was never known to exist in the family, but says that, some three or four years ago, patient was in the habit of constantly associating with a Chinese boy who was suffering from this complaint (this statement is borne out by the patient), and thinks it may be attributable to that cause. Patient was suckled when a child by a wet-nurse who to all appearances was at that time free from the disease, but having lost sight of her, father cannot say if such be the case now. Patient's previous state of health very good.

Of patient's relatives out in this country all are clean skinned and evidently free from the disease. Father died seven years ago from ; mother, two years ago from childbirth; one uncle is a lunatic. Want of cleanliness or improper food does not appear to have had an effect in producing present complaint, as patient's parents were in comfortable circumstances, and great care was taken of him. Disease first made its appearance about 10 months ago (ushered in by a febrile paroxysm), and since then is running its course, slow but sure. For the last three days small blisters are forming on fingers and toes in neighbourhood of joints, which on breaking discharge a small quantity of ichorous fluid, and leave a painful open sore. Medicine appears to have had no effect in arresting the disease, while diet, exercise, cleanliness, &c. tend to check its rapid development.

a. The disease in all these cases was fully developed; there was no ulceration, but the perspiration was most offensive and copious.

b. 1.—H. De Souza lived with my apothecary, Mr. Sneider (whose nephew he was), for some years, Mr. S. labouring under confirmed leprosy at the time, of which he died in 1861. Some time before death, extensive ulceration set in, attended with a profuse offensive discharge, but the lad contracted the disease before this appeared; Mr. De Souza died last year with leprosy fully developed.

2.—"Sheikh Hussain," a convict from the Madras Presidency, whilst acting as Hospital orderly to Mr. Sneider above mentioned, contracted leprosy from him, and died in less than 12 months from the time the disease first became manifest; prior to death, ulceration of the hands and feet set in.

c. H. De Souza, mentioned above (being well to do in the world), married a fine hearty Dutch girl, born in Java; they lived some two years together, but were separated after that time on account of his being leprous. She left Singapore for Holland some 18 months ago, apparently quite free from the disease. Still I should be sorry to state that it cannot be transmitted by sexual intercourse.

Dr. McDougall writes, "I have not met with a case I could satisfy myself had arisen from contagion; but it is the universal belief among the people, whether Chinese, Malay or Dyak, that it is contagious, and they all alike separate the lepers, and avoid all contact with them."

Interrogatory XI.

Lepers mix freely with the rest of the community, but are always avoided.

Interrogatory XII.

Government have a leper ward attached to the large pauper hospital at Singapore (built at the expense of a wealthy Chinese named Tan Toek Seng), where lepers are received, but they manage to escape, and prowl about, seeking alms, a nuisance to the whole community.

At Malacca and Penang, however, large sums of money have been subscribed by the richer natives of all classes for the erection of a leper hospital, so great is the dread they have of the disease; and Government have given over Pulo "Siranbon," an island contiguous to Malacca, where a comfortable lazaretto has been elected, to which lepers are removed at their own request, I believe (as I repeat there is no Act at present in force to compel them), where they are comfortable enough, growing their own vegetables, &c.; they seem contented enough; their food is sent out from time to time from Malacca. At Penang in a very few days upwards of $20,000 were readily subscribed, and Government have given over the lovely island of Pulo "Jerajah" to the committee, where a roomy poorhouse, hospital, and lazaretto are being erected. I have just reported it to be an excellent site, and the plan of the hospital is well adapted in every way for the purpose intended.

Interrogatory XIII.

At Singapore about 23.

Interrogatory XIV.

I have no hesitation in stating it has increased to a serious extent at Singapore, Penang, and Malacca; I have been in these parts upwards of 19 years, and can speak confidently on this head. I have more than once brought the circumstance to the notice of Government, and recommended complete segregation, and I attribute the great increase to neglect of this precaution.

Interrogatory XV.

The result is very unsatisfactory; sometimes the disease is arrested with the loss of all the fingers and toes. I have never known leprosy undergo a spontaneous cure. Only those who are sent to prison are bonâ fide treated at Government expense; nearly all are supported by voluntary contributions; very few only recover partially; it is seldom a complete cure is effected, and this at the expense of great disfigurement.

Dr. McDougall writes, "I have met with several cases of apparently spontaneous "cure after the loss of fingers or toes or metatarsal joints; but I believe that the "disease will sooner or later return in such cases, if the people live till they are "45 or 50."

To Henry A. Pitman, M.D., Registrar, Royal College of Physicians.

Dear Sir, Hendon, April 10, 1863.

I have seen the interrogatories on leprosy which have been issued by the College of Physicians for the colonies. And I have thought that I might possibly contribute some information on the subject, at any rate my experience, as from a residence of many years in India, especially in Bengal, where leprosy is frequently met with, I have had opportunities of observing it, though not so closely perhaps as it has been observed by the medical officers who have been specially deputed to take charge of the leper asylums.

The malady is held for the most part in great dread by the Europeans and natives, and the more respectable and alarmed of the former have generally their servants inspected every month by a native doctor, to ascertain if there is any one affected by the disease. Nor is this to be wondered at, so general is the impression of its being contagious, and nothing can be more loathsome than the sight of a leper suffering from the disease in its worst form.

Instances are recorded where the disease has been sufficient to disinherit a Mussulman from succession to his property. Amongst the Eurasians I have known several instances of an engagement to marry being broken off in consequence of its having been discovered that one of the parties was affected by leprosy.

The present inquiry will, I have no doubt, be productive of great good; and I fully expect that much valuable information will be obtained from officers on the spot to these interrogatories of the College; and that the attention of the several local governments will be brought to bear most beneficially upon this class of their subjects, who may now be considered on the whole as outcasts.

I remain, &c.

J. Jackson, M.D.

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1. Leprosy is known in the province of Bengal and generally throughout India, though not so extensively in the upper and midland parts of India as in the lower provinces, and especially along the districts bordering on the sea.

a. is observed in a variety of forms; but there seem to be three that are distinct.

It As it affects the rete mucosum, and produces a peculiar whiteness either on the lips or on other parts of the body, being the Λευκη or vitiligo of the ancients.

b. As it occurs as an oily dark stain on the arms and legs and other parts of the body, attended with discolouration, and frequently with diminished sensibility, or total insensibility of the part.

c. As it occurs in the tuberculated form affecting the alæ nasi, the pinna of the ear, the eyelids, and forehead, the mucous membrane of the eye and nose, and other parts of the body, with a general thickening of the tissues, sometimes attended with elevations varying in size from a hazel nut split in two to several lines, an inch even in diameter, and considerably elevated, to the extent of two lines. The first and second forms are frequently met with in the same person; and occasionally in the third or worst form there are patches of the second variety. This the tuberculated, which is the most severe form, is termed by the natives the jejani, or burra beemanee, the "great sickness." I do not consider these distinct diseases, but varieties of the same malady. I may mention that there is a peculiar affection of the hands considered as leprous, in which there is a constant exudation of sensible perspiration, so that when the hand is raised, the fingers being dependent, there is a continual distillation from the tips of the fingers, like water passing through a filterer. I have several times seen men lose their situations as writers, from this affection, the paper being so greatly moistened as to be spoilt for writing. There is an opposite condition to this, where the palms of the hands and soles of the feet are dry and harsh, with deep fissures and ulcerations, and where the nails of the hands and feet are diseased. The disease is indicative of a low vitality, showing itself in the blood first, and afterwards in the nerves of nutrition and sensation.

2. Leprosy rarely appears before puberty. It generally manifests itself later in life. I have never seen it in its worst form in any one under 18 years of age.

The earliest symptoms depend upon the variety In the first form of the disease, Λευκη, there is a small discolouration of the skin, which loses its deep colour, or if upon the lips in a fair person the pink colour becomes changed to white.

In the second form there is generally a dark greasy stain in two corresponding parts of the body, slightly irritable in the first instance, and by slow degrees becoming insensible; at the same time there is a want of sensibility in other parts of the body, such as the legs

and thighs. The countenance also assumes a livid or orange appearance, and there is a peculiar watery relaxed expression of the eye; a state of general indisposition, with depressed spirits, supervene, followed for the most part by a languid and miserable existence.

In the third or worst form it shows itself in the dulness of the conjunctiva, and the eye and lids put on the character of chronic conjunctivitis. The lids afterwards become thickened and the eye irritable, the alæ nasi become swollen, the Schneiderian membrane irritable and red, and a slight discharge takes place. The pinna of the ear is thickened, and there are small elevated unctuous patches on the forehead. With these symptoms, there is a want of sensibility in the upper and lower extremities, slight bruises will often produce a sore and ulcers, which do not heal readily. If the patient is allowed to continue without treatment, the ulcers increase and the bones are exposed; phalanx after phalanx drops off, unattended with pain; the mucous membrane in the nose becomes ulcerated or thickened, and slowly but surely the patient gets worse and worse, and most probably is carried off by diarrhœa, or dies from exhaustion.

3. In the simple discolouration of the skin the disease will remain passive for years, and most probably not pass beyond this first stage. I have known individuals for five and six years to observe no change in the disease, and not to suffer from any constitutional symptom.

In the more severe forms of the disease, a few years will bring about a fatal termination, and in some cases even a few months will bring the sufferer to the grave.

The disease is observed generally between the ages of 25 and 55, and within that time it will attain its full developement.

The form of disease will determine its duration, and it matters not at what period of life it occurs. Its fatality will take place earlier or later, according to the constitution of the individual and his power of resisting the disease, the care taken of him in regard to diet and shelter.

4. I am unable to speak positively on this point, from the great seclusion of the females of the better class in India; the proportion of lepers is apparently much greater amongst the males. I have known several native females affected with the disease, and two European females.

5. The disease is considerably more frequent amongst the dark population. I am unable to say in what proportion. But it is extremely rare for a European to be affected by it, and it is not very common amongst the Eurasians.

6. In Bengal the disease is of most frequent occurrence in the lowest class, especially the fishermen, who chiefly live upon fish, and that in a semi putrid-state.

A low, damp, urban, malarious atmosphere seems to develop the disease. It is rarely found amongst the dry and hilly places. The huts of the poor Bengallee are low, and the occupants lie chiefly upon the ground.

Their habits are sober, but they are poorly fed and clothed. Their diet of rice, not the best, and fish with vegetables made into curry, or boiled. All the waters of Bengal abound in fish, and this forms a main article of diet; very few of the people take animal food. The occupation frequently that of fishermen.

7. Continuance in the same locality, partaking of the same diet, seem to favour the developement of the disease; salt, acids, and sugar taken in too great abundance seem to be injurious.

8. The disease appears to be hereditary in some cases.

And there are several instances that have been brought to my notice where one member of a family has been affected, whilst others have remained free.

9. I have no reason to believe that leprosy is in any degree dependent upon syphilis or any other disease. The occurrence of syphilis amongst the people of Upper India is common. There are very few cases which come under treatment, where some disease or other of the sexual organs is not complained of. But there is not a great amount of leprosy in the upper or midland provinces.

In examining the skulls of many of the pilgrims who died at Juggernath in Lower Bengal, there certainly appeared a very large proportion that were thickened and diseased, as if from venereal taint; but I was unable in any way to connect this fact with the circumstance of the person having had leprosy.

10. It is not a contagious disease in the ordinary sense of the term, and is not, as far as my experience goes, communicated through the atmosphere, as in cases of eruptive fevers.

Some natives and most Europeans have a general horror of being brought into contact with a leper, but others do not seem to mind it so much. Husbands have lived with their wives affected with leprosy, and wives with their husbands in this condition, and have not suffered. Nor does it seem communicable by sexual intercourse. I have known several instances of such connexion without contagion.

There is a doubt in my mind in regard to inoculation, from what I have learned from others. A case has been reported to me of a European who had become leprous from having been cut with a razor that had been used by a leper.

A respectable European stated to a medical friend of mine that he had contracted the disease from a favourite servant who was constantly about his person. No one with the tubercular form of the disease, when it is attended with ulceration, is allowed to remain as a servant. I have always considered it my duty to warn any master of a family, when I have known a leper to be amongst his servants, however mild the case might be.

11. There is no legal impediment to the communication of the leprous with the people. The social impediment is sufficiently strong, and as these poor creatures are for the most part feeble, they generally prefer the custom of petitioning for alms to any more active exertion, and would rather beg their living than enter into the leper asylum and have food and lodging provided for them.

12. In Calcutta there is an asylum provided for the lepers, under the care of a medical superintendent; but lepers are not admitted into the general hospitals.

13. I cannot say, and have no means at hand for obtaining such information.

14. The same.

15. Benefit no doubt is derived from careful attention to hygiene, diet, and medical treatment.

I have never known leprosy undergo any spontaneous cure, so long as the person afflicted resided in the same place; but I have known European lepers benefited and in the end relieved by making the voyage to England, and remaining in the country some time under treatment.

16. I cannot say.

17. I have known the disease to remain passive, and be unattended with constitutional symptoms, for years; for instance, a teacher in a school to continue at his post, but wearing gloves so as to prevent the disease being observed. But I know of no spontaneous cure.

Marked benefit is derived from preparations of iron, arsenic, creosote, the madar, good living, attention to cleanliness; but especially a change of locality.

Cures have been related to me of this disease from the continued use of the chaud-moogra odorata, described by Roxburg in the "Flora Indica." This is given in the form of a pill from the nut, or the expressed oil in ghee or clarified butter. All salts, sugar, and acids are forbidden. After the use of this remedy, the swellings are said to subside and the discharge diminish. Men who are in the habit of using this remedy speak of it in the strongest terms of approbation. The gentleman who first brought it to my notice informed me that he had never known a case that had not been decidedly benefited by it.

In the 1st vol. of the Calcutta Medical Transactions there is a learned paper by the late Horace Hayman Wilson, on the history of leprosy, as given by the Sanscrit writers. There are also detailed papers on the use of the madar by Dr. Playfair and Mr. Twining, and on the chaud-moogra in one of the later publications.

APPENDIX.

NEW BRUNSWICK.

DESPATCH from LIEUT. GOVERNOR GORDON to the DUKE OF NEWCASTLE.

No. 28. Fredericton, N.B.
MY LORD DUKE, 13th April, 1863.

ON the 2d October last, I had the honor to receive your Grace's Circular Despatch of the 28th of August, enclosing certain queries relating to the disease of leprosy.

2. I lost no time in sending copies of those queries to some of the leading members of the medical profession in the province, and duly received the replies which I have now the honor to enclose.

3. It was however my intention not to forward these papers to your Grace until I had received a report from the resident physician of the lazaretto, Dr. Nicholson, as it was manifest that his report must necessarily be the most satisfactory, and the most important of those which I could hope to obtain. I regret to say, however, that although Dr. Nicholson has been repeatedly written to by my directions on the subject, as shown on the margin, he has not yet thought proper to take any notice of my communications, or to return any reply to the queries which in obedience to your Grace's commands were transmitted to him by me.

Capt. Moody to Dr. Nicholson - - 2d Oct. 1862
Do. - 14th Oct. „
Do. - 15th Dec. „
Do. - 2d Feb. 1863
Do. - 20th Feb. „
Do. - 4th Mar. „
Do. - 18th Mar. „

4. Under these circumstances, a period of more than six months having elapsed since I received your Grace's circular, I do not think I am justified in longer detaining the reports which I have already received, although I regret that they are not accompanied by that of Dr. Nicholson.

5. A great variety of conflicting opinions prevail as to the manner in which the disease was introduced into the province. At the present time it may be said to be confined to a limited number of families of French extraction, living on the borders of the counties of Gloucester and Northumberland, although I believe there is authentic evidence of some few English settlers having also fallen victims to this horrible malady.

6. The attention of the provincial legislature was first called to the subject about 30 years ago; and from time to time subsequently stringent acts have been passed directing the seclusion of lepers, and empowering the members of a Board of Health, nominated by the Governor in Council, to commit any leprous person to custody in a building called by courtesy a leper hospital, but which until late years was little better than a mere prison. The Act at present in force is 13 Vict. cap. 18 ; revised Statutes of New Brunswick Vol. 3, page 330, which has from time to time been renewed and continued. About years ago the establishment was removed from Sheldrake Island in the Mirimachi, to its present position at Tracadie, on the east coast of the county of Gloucester.

7. Last summer in the course of my official tour I visited the lazaretto.

8. Its situation is dreary in the extreme, and the view which it commands embraces no object calculated to please, or indeed to arrest the eye. On the one side is a shallow turbid sea, which at the time of my visit was unenlivened by a single sail; on the other lies a monotonous stretch of bare, flat, cleared land, only relieved by the ugly church and mean wooden houses of a North American village.

9. The outer enclosure of the lazaretto consists of a grass field containing about three or four acres. Within these limits the lepers are now allowed to roam at will. Until lately, they had been confined to the much narrower bounds of a smaller enclosure in the centre of the large one, and containing the buildings of the hospital itself.

10. Into these dismal precincts I entered accompanied by the Roman Catholic Bishop of Chatham, the Honorable James Davidson, secretary to the Board of Health, the resident physician Dr. Nicholson, and the chaplain to the hospital the Reverend Father Gavreau.

11. Within the inner enclosure are several small wooden buildings detached from each other, and comprising the kitchen, laundry, &c., of the establishment ; one newly completed was furnished with a bath, a great addition to the comfort of the unhappy inmates. The hospital itself is a building containing two large rooms, the one devoted to the male, and the other to the female patients. In the centre of each room is a stove and table, with a few benches and stools, whilst the beds of the patients are ranged along the walls. These rooms are sufficiently light and well ventilated, and at the time of my visit, were perfectly clean and neat. In the rear of these rooms is a small chapel, so arranged that a window, obliquely transversing the wall on each side of the partition which divides the two rooms, enables the patients of either sex to witness the celebration of mass without meeting. Through the same apertures confessions are received, and the holy Communion administered. I may here remark how curious an illustration is thus afforded to the architectural student of the object of those low skew windows often found in the chancels of ancient churches. In a remote corner of North America, in a rude wooden building of modern date erected by men who never saw a mediæval church, or possess the least acquaintance with Gothic architecture, convenience has suggested an arrangement precisely similar to one which has long puzzled the antiquaries and architects of Europe.

12. At the time of my visit there were 23 patients in the lazaretto, 13 males and 10 females, all of whom were French Roman Catholics belonging to families of the lowest class. These were of all ages, and suffering from every stage of the disease. One old man whose features were so disfigured as to be barely human, and who appeared in the extremity of dotage, could hardly be roused from his apathy sufficiently to receive the bishop's blessing, which was eagerly sought on their knees by the others ; but there were also young men whose arms seemed as strong, and their powers of work and of enjoyment as unimpaired as they ever had been ; and, saddest sight of all, there were in addition to these young children condemned to pass here a life of hopeless misery.

13. I was especially touched by the appearance of three poor boys between the ages of 15 and 11 years. To the ordinary observer they were like other lads, bright-eyed and intelligent enough ; but the fatal marks which sufficed to separate them from the outer world were upon them, and they were now shut up for ever within the walls of the lazaretto.

14. An impression similar in kind, though feebler in degree, is produced by the sight of all the younger patients. There is something almost appalling in the thought that from the time of his arrival until his death, a period of perhaps many long years, a man, though endowed with the capacities, the passions, and the desires of other men, is condemned to pass from youth to middle life, and from middle life to old age, with no society but that of his fellow sufferers, no employment, no amusement, no resource, with

nothing to mark his hours but the arrival of some fresh victim, with nothing to do except to watch his companions slowly dying round him. Hardly any of the patients could read, and those who could had no books. No provision seemed to be made to provide them with any occupation either bodily or mental, and under these circumstances I was not surprised to learn that in the later stages of the disease the mind generally became greatly enfeebled.

15. The majority of the patients did not appear to me to suffer any great amount of pain, and I was informed that one of the characteristics of the disease was the insensibility of the flesh to accidental injury. One individual was pointed out to me whose hand and arm had been allowed to rest accidentally on a nearly red-hot stove, and who had never discovered the fact until attention was arrested by the strong scent of the burning limb which was terribly injured.

16. Until a short time ago there was no resident medical attendant at Tracadie. The lepers were locked up untended, visited occasionally by the Roman Catholic priest, a somewhat eccentric, but bold, energetic character, and inspected medically by a physician only four times a year. Soon after my arrival in the province, I appointed, with the advice of my council, a permanent physician, who now resides in the village and pays a daily visit to the hospital. This gentleman, Dr. Nicholson, has shown a strange and culpable neglect in returning no reply to your Grace's interrogatories; but I am bound to say that when I was at Tracadie he appeared to me to feel a real and lively interest in his unfortunate patients, and he certainly had done much towards ameliorating their miserable condition. It is also right that I should, in connexion with this branch of the subject, inform your Grace that the excellent secretary to the Board of Health, the Honorable James Davidson, has never ceased to press upon the Executive Government the necessity of providing sufficiently for the maintenance of the lazaretto, and that, so far as his exertions unaided by any adequate funds could avail, no pains have been spared to render the fate of the lepers as little intolerable as possible.

17. I assume that the contagious character of the disease is so clearly proved as to render the seclusion of those affected by it within the walls of a lazaretto indispensable. That is a medical question on which I am not competent to form an opinion. It is, however, worthy of remark that the laundress of the hospital, who is not a leper, and who is subjected to the same rigorous confinement as the lepers themselves, has never, as I am informed, caught the disease. The present occupant of the situation has been employed for about three years, and has certainly not done so. As nothing, however, short of an imperative public necessity would justify the horrible mental torture which such a confinement as that in the lazaretto must inflict, I am willing to assume that this question was well and maturely weighed before the Legislature consented to pass and to renew the acts on this subject now in force.

18. I am, however, inclined to consider that, even adopting this view of the case, the powers conferred by the existing Act upon the individual members of the Board of Health are excessive. A single member of that Board (and be it remembered they are not medical men) may, by the third section, "at all convenient times in the day time, to visit, inspect, and "examine any person or persons suspected to be "labouring under or infected with the disease "herein-before mentioned, and for that purpose to "enter into any house, building, or inclosure in "which it may be suspected that any such person "or persons may be found, and to break open the "same if necessary so to do in order to obtain "entrance, and by order in writing under the hand "of any member of such Board of Health to cause "to be removed to the lazarettos all and every person "or persons who, upon such examination and inspection, shall be found to be labouring under or "infected with the said disease, there to be kept and "detained subject to the rules and regulations made "and ordained or to be made and ordained for the "government of such lazaretto."

It certainly appears to me that no person should be committed to the lazaretto until a competent medical authority has pronounced him to be really suffering from the disease, more especially as there are other disorders which to an unskilled eye present nearly the same symptoms as those which attend the earlier stages of leprosy.

19. Assuming that the Royal Gazette, Journals of the Legislative Council and Assembly of this Province are preserved in the Colonial Office, I enclose a list of the papers which have from time to time been published here respecting the disease of leprosy in New Brunswick.

20. I cannot close this despatch without giving expression to the regret I feel in having to inform your Grace of the recent death of the author of one of the two reports which I now enclose. The Honorable Dr. Gordon was a man of retiring disposition and not often found to take a prominent part in public life, but he was a useful member of the Legislative Council, and his private character will cause him to be long remembered with regret in the northern section of the province.

I have, &c.

(Signed) Arthur H. Gordon.

His Grace
The Duke of Newcastle, K.G.
&c. &c. &c.

Reports made at various times, by Commissioners appointed by the Government, &c., on the lazaretto at Tracadie, New Brunswick.

Drs. Key, Tolderoy, Skene, and Gordon, Royal Gazette, July 3, 1844.
Dr. Key, Journal, House of Assembly, 1845, p. 164.
Drs. Wilson and Bayard, Journals, 1848, p. 58.
Dr. Tolderoy, Journals, 1848, p. 151.
Dr. Key, Journals, 1848, p. 147.
Dr. Hart, Journals, 1848, p. 155.
Dr. La Bellois, Journals, 1850, p. 159.
Dr. La Bellois, Appendix, Journals, 1851, p. 120.
Honorable J. Davidson, Appendix, Journals, 1854, p. 243.
Dr. M'Laren, &c., Appendix, Journals, 1858, p. 588.

Letter from Under Secretary of State, Mr. Fortescue, to Dr. Pitman.

Downing Street,
Sir, 21st May 1863.

With reference to the letter from this office of the 14th ultimo, I am directed by the Duke of Newcastle to transmit to you, to be submitted to the College of Physicians, additional returns which have been received from Governors of Colonies and British Consuls abroad to the interrogatories respecting the disease of leprosy.

With regard to the despatch from the Lieut.-Governor of New Brunswick of the 13th April, his Grace thinks that the Lieut.-Governor overrates the stringency of the Act to which he refers; for it seems to be empowering only, and his Grace conceives that the Governor may lawfully cease to give effect to it, as well as (with the advice of the Executive Council) vary or rescind the regulations affecting the lepers in the asylum.

So soon, therefore, as the point of contagiousness or non-contagiousness, or more or less of contagiousness shall have been decided by the College of Physicians, it will become a serious question what instructions should be given to the Lieut.-Governor in regard to the treatment of lepers as described in his despatch.

I am, &c.

Dr. Pitman. (Signed) C. Fortescue.

JAMAICA.

Despatch from the Duke of Newcastle to Lieut.-Governor Eyre.

No. 575. Downing Street,
Sir, 25th March 1863.

I have to acknowledge the receipt of your Despatch, No 18, of the 24th of January, forwarding the replies of Dr. Fiddes to the queries which accompanied my Circular Despatch of the 28th August last respecting leprosy, together with an essay which he had written upon the subject of that disease.

You have transmitted Dr. Fiddes' return without any remark; but I observe that it contains under the 13th head of interrogatory a statement that the building in which leprous paupers are kept, at the cost of the Corporation of Kingston, is miserably dilapidated and filthy, and the condition of the inmates as deplorable as it is possible to be. And under the 15th head of interrogatory, Dr. Fiddes says, "I am not aware what proportion of the lepers "kept at the public expense recover, but from the "little attention paid to this class of persons, I "doubt if there have been any recoveries in the "wretched asylum of Kingston."

I must observe that although you may have no legal and technical power to rectify what is amiss in an institution under the control of the Corporation of Kingston, it is your duty to exercise any influence in the matter which your position may give you the means of exercising, and at least to bring under the notice of the Mayor and Corporation the statements which have been made.

I have, &c.
Lieut.-Governor Eyre, (Signed) Newcastle.
&c. &c. &c.

Despatch from Lieut.-Governor Eyre to the Duke of Newcastle.

No. 136. King's House,
My Lord Duke, 20th May 1863.

In reply to your Grace's Despatch, No. 575, of the 25th March last, calling my attention to certain comments by Dr. Fiddes on the accommodation provided for lepers in Kingston, I have the honor to transmit a communication from the mayor of that city, pointing out that there is in reality no lepers' home existing, and that the place to which Dr. Fiddes refers is a portion of certain premises belonging to the parish which the lepers, who are receiving money allowances from the parochial authorities, have been merely permitted to occupy.

2. Mr. Jordon also justly points out that, owing to the great difficulty of procuring a suitable site for such an institution, no lepers' home could heretofore be provided, but that as an Act was passed in in December of last year, granting a sum of two thousand pounds per annum for establishing and keeping up a leper home, there is every reason to hope that this great want may shortly be provided for.

I may add that every exertion has been made and is now being made to obtain a convenient and suitable locality.

3. With regard to the more general want referred to in Mr. Jordon's letter of an almshouse in which could be received homeless paupers of the district or poor persons sent up from the country to the General Hospital, but ineligible for admission into that institution from the nature of their diseases, I have to state that if your grace is pleased to sanction the proposal made in my Despatch, No. 89, of the 24th April, for building a new hospital, there would on its completion be ample and suitable accommodation in the present hospital and contiguous buildings, which could at once be converted into an almshouse, whilst in the meantime the best practicable temporary arrangements might be made year by year to meet the necessities of the case. For the current year, in addition to the ordinary resources at the disposal of the parochial authorities, there have been granted for the city of Kingston, thirty pounds in aid of the St. George's Almshouse, seventy pounds in aid of the almshouse in connexion with the Kingston parish church, and two hundred pounds in aid of the Kingston almshouse.

I have, &c.
His Grace (Signed) E. Eyre.
The Duke of Newcastle, K.G.
&c. &c. &c.

Letter from Mr. Jordon to Mr. Austin.

Sir, Kingston, 6th May 1863.

I have the honour to acknowledge the receipt of your communication of the 21st ultimo, and in reply to state that Dr. Fiddes laboured under a misapprehension when he alluded to the "wretched "asylum of Kingston" for lepers, or led the Secretary of State for the colonies to infer that there was such an asylum in this city.

2. There are a great many persons in this city labouring under that loathsome disease, but there is no asylum or place provided by the public or the parish for their reception or accommodation. It was this want which led to the passing of the 23d Vict. chapter 8, and it is to be regretted that the provisions of that Act, from various causes, and particularly the difficulty of procuring a proper site, have not been carried out.

3. There are twelve lepers who receive a money allowance from the parish of Kingston as paupers, and who, having no friends or home, have been permitted to occupy a portion of certain premises in the city belonging to the parish.

4. It is these premises which Dr. Fiddes designates the wretched asylum of Kingston.

5. Strong objections are entertained to their being used, even temporarily as a lepers' home, on the ground that they will not afford sufficient recommendation for the number of lepers in the city, and their use will not relieve the city from the presence of these persons. These are besides the only premises which can be appropriated to the temporary reception of persons coming from the other parishes, and seeking but not finding admission into the public hospital on account of their labouring under incurable disorders until a proper almshouse can be established.

6. The re-enactment of the 23 Vict. c. 8. (see 26 Vict. c. 5.), and the appropriation of 2,000*l.* per annum for the maintenance of a lepers' home, will, I trust, enable the Government shortly to provide for the accommodation of persons for whom the deepest sympathy is felt by the authorities of the city, but for whose accommodation in an asylum they have not been able, from the absence of a law authorizing them to do so, to make provision.

I have, &c.
(Signed) Edward Jordon,
H. W. Austin, Esq. Mayor.

Despatch from the Duke of Newcastle to Lieut.-Governor Eyre.

Sir, 30th June 1863.

I have to acknowledge the receipt of your Despatch, No. 136, of the 20th of May, enclosing a copy of a letter from the Mayor of Kingston in reply to the comments made by Dr. Fiddes on the accommodation provided for lepers in that town.

With regard to your observations respecting the want, to which Mr. Jordon refers, of an almshouse for homeless paupers, I have to observe that if the old hospital buildings should become convertible to the use of the poor, an endeavour should be made to obtain the enactment of a poor law founded upon approved principles, since the establishment of a

mere almshouse without careful regulation of admissions and provisions for proper and effective internal discipline would probably do more harm than good.

I have, &c.
(Signed) NEWCASTLE.

Lieut.-Governor Eyre,
&c. &c. &c.

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26 Vict. c. 5.

An Act to provide for the establishment of a "Lepers' Home," and the proper care otherwise of lepers and similarly diseased persons.

WHEREAS it is necessary to provide for the reception and accommodation of persons afflicted with leprosy, or yaws, or diseases akin thereto respectively: Be it enacted by the governor, legislative council, and assembly of this island, and by the authority of the same, as follows:

I. It shall be lawful for the governor and executive committee to lease for a term of years, or to purchase, as they may think proper, sufficient lands in some convenient locality or localities in any or either of the parishes of Kingston, Saint Catherine, Saint Andrew, Port Royal, or Saint David, for the settlement and establishment of persons afflicted with leprosy, or yaws, or diseases akin thereto; and for that purpose to erect such cottages or huts, or other buildings as may be considered best adapted for the careful and comfortable reception and keeping of such afflicted persons; and in every such establishment, due care shall be taken to provide for the complete separation of the sexes; and the buildings and premises intended for persons of the male sex shall be divided, and as far as can be removed from those intended for females, and be placed on separate parcels of land, if the executive committee shall so advise.

II. It shall be lawful for the governor, so soon as proper places have been provided for the keeping of persons so afflicted as aforesaid, which places shall be called respectively the "Lepers' Home," to appoint a medical attendant to the same at a salary not exceeding [one hundred and twenty] pounds per annum; a male superintendent at a salary not exceeding [eighty] pounds per annum; and a matron at a salary not exceeding [sixty] pounds per annum; payable quarterly or monthly as the governor shall direct, by warrant under his hand, and from time to time to remove any person so appointed, and on any vacancy occurring from removal or otherwise to appoint some other person to fill such vacancy.

III. It shall be lawful for the superintendent to be appointed as aforesaid to employ two or more male servants to attend upon the male inmates; and for the matron to be appointed as aforesaid to employ two or three female servants to attend upon the female inmates, at such wages respectively as the governor in executive committee shall approve, which wages shall be paid by warrant of the governor as aforesaid, and such superintendent and matron shall have power from time to time to remove any person so employed by him or her respectively; and on any vacancy occurring from removal or otherwise to appoint some other person to fill the same.

IV. The inspector and director, in conjunction with the medical officers of the public hospital, shall, subject to the approval of the governor in executive committee, make rules and regulations for the government of the medical attendant, superintendent, matron, and other officers, servants, and inmates of the respective divisions of the institution, and may, subject to such approval as aforesaid, rescind, alter, amend, or add to such rules and regulations, or make new ones from time to time, as necessity may require.

V. The medical attendant shall visit once a week, and oftener if necessary, and prescribe medical treatment where necessary for all the inmates of the institution, and shall make a quarterly report to the governor in executive committee of the state and condition of such inmates, and of the institution generally, with any recommendations or remarks which he may think fit to submit with, or as part of, any such report.

VI. The inspector and director of the public hospital, or such other person as the governor shall appoint, shall visit and inspect the institution, and all inmates therein, and report on their condition at least once in each month, and oftener if the governor shall require; and shall make a note of each such visit in the visiting book, which shall be kept at the institution, with such observations upon the state and condition of the institution and inmates thereof, and the conduct of the officers and servants thereof, as he shall think proper; and the superintendent and matron shall transmit monthly to the governor a transcript of all entries so made in such visiting book, relating to the respective divisions of the institution; and the said inspector and director, or other person to be appointed as aforesaid, shall be paid at the rate of [sixty] pounds per annum, on the warrant of the governor for such and his other services under this Act.

VII. The said inspector and director, or other person to be appointed as aforesaid, shall take contracts, subject to the approval of the governor, in executive committee, for stores, provisions, and necessaries for the institution; and such medicines as may be required for the inmates thereof shall be supplied from the public hospital from time to time, on the requisition of the medical attendant.

VIII. The superintendent and matron respectively shall be responsible for the due care and appropriation of all stores, provisions, and necessaries supplied to the respective divisions of the institution to which they shall be appointed, and shall make reports monthly to the said inspector and director, or such other person as the governor shall appoint to inspect the institution as aforesaid, of the quantities received, consumption, quantities on hand, and state and condition from time to time of all such stores, necessaries, and provisions respectively, and generally of the state of the respective divisions of the institution; and the said inspector and director, or other person to be appointed as aforesaid, shall, on each visit thereto, check the stores, provisions, and necessaries on hand with the said reports thereof.

IX. Upon the establishment of the "Lepers' Home" any person afflicted with leprosy, or yaws, or other disease akin thereto, who shall be in indigent circumstances, and shall present himself or herself at the institution with a certificate from a qualified medical practitioner that he or she is afflicted with yaws, or leprosy, or other disease akin thereto, shall be allowed to remain in, and be considered and treated as an inmate of, such institution.

X. Any person afflicted with leprosy, or yaws, or other disease akin thereto, who, not being in destitute circumstances, shall desire to become an inmate of the "Lepers' Home," may do so upon giving security to the superintendent of the same for payment, monthly, of the cost of his maintenance and medical treatment at a rate not exceeding (two shillings) per day.

XI. All sums of money which shall become due and owing to the public for the maintenance and medical treatment of any such last before-mentioned person shall be recovered by the superintendent or matron of the "Lepers' Home" for the time being, or some person appointed by him or her, in the same manner as demands may be recovered under any act which may be in force for the recovery of small debts, and without limitation of amount.

XII. If any person, deemed to be afflicted as aforesaid, shall be found loitering in any road, street, lane, or thoroughfare of, or leading to or from any city, town, or village, or wandering about from place to place, it shall be lawful for any policeman, constable, or other person to apprehend such person, and take him or her before any qualified medical practitioner, who, upon being satisfied that the person so-

brought before him is a leper, or afflicted with yaws or other disease akin thereto, shall direct, in writing under his hand, according to the form hereunto annexed, that such person be, and thereupon such person shall be taken to the "Lepers' Home," and received into the same; and any reasonable expense incurred in taking such person before a qualified medical practitioner, and to the "Lepers' Home," shall be paid by the superintendent of the same as a charge against the institution.

XIII. If any person, admitted to either division of the institution, shall leave it and be seen wandering about in any street, thoroughfare, or public place or way, he or she shall be taken by the superintendent or matron, or any policeman, constable, or other person back to the institution, or appropriate division thereof; and in case such person shall again leave the same, and be taken wandering about as aforesaid, it shall be the duty of the superintendent or matron to take measures, under such rules and regulations as shall in that respect be from time to time made by the governor in executive committee for the proper keeping of such person within the bounds of the institution.

XIV. The Receiver General shall pay, upon the warrant of the governor, monthly or otherwise, such sums of money as shall be necessary to meet the expenses of the "Lepers' Home," not exceeding the sum of [two thousand] pounds in any one year.

XV. It shall be lawful for any parish, or adjoining parishes, other than either of those before-named in this Act, where it shall seem necessary, and with the sanction of the executive committee, to include, in the annual estimates of expenditure, a sufficient sum for providing for the proper care and keeping of persons afflicted as aforesaid within such other respective parish or parishes; and, where adjoining parishes shall join in arrangements for that purpose, the expense shall be borne between them rateably, according to the number of diseased persons chargeable to each parish respectively.

SCHEDULE.

ORDER FOR THE RECEPTION OF A LEPER, &c.

I, *C.D.* of, &c. being satisfied that *A.B.* is a leper, or afflicted with yaws, or
and was found loitering in street, or
road, or lane, or
thoroughfare of, or leading to or
from the city, town, or village, of
or wandering about from place to place, and is a proper person to be taken charge of and detained under care and treatment, hereby direct you to receive the said *A.B.* as a patient or inmate into the "Lepers' Home."

Subjoined is a statement respecting the said *A.B.*

Signature of *C.D.*, &c. ,
M.D. or other degree, residing and practising in the parish of .

STATEMENT.

(If any particulars in this statement be not known, the fact to be so stated.)

Name of patient, and Christian name at length.
Sex and age.
Married, single, or widowed.
Condition of life and previous occupation (if any.)
The religious persuasion, as far as known.
Previous place of abode.
Afflicted with .
Name, and Christian name, and place of abode, of the nearest known relative of the patient, and degree of relationship (if known).

I certify, that to the best of my knowledge, the above particulars are correctly stated.

Signature of *C.D.* ,
M.D. or other degree, residing and practising in the parish of .

TRINIDAD.

DESPATCH from the Duke of NEWCASTLE to Governor KEATE.

No. 629.

SIR, Downing Street, 11th June 1863.

I HAVE to acknowledge the receipt of your Despatch No. 76, of the 25th of April, enclosing the answers which you have received to the interrogatories forwarded to you in my Circular Despatch of the 28th of August, respecting the disease of leprosy.

I shall be glad to receive from you some explanation of the reply by Dr. Murray to the Interrogatory No. 11, whether persons affected with leprosy are permitted in Trinidad to communicate freely with the rest of the community, or whether there is any restriction imposed or segregation enforced in respect of them. Dr. Murray's language appears to imply that some law is in existence by which, if effectually put in force, lepers may be arrested and prevented from going at large. If such a law is in existence, a copy of it should have accompanied the papers, with an explanation of the grounds on which, if approving of the law, you are prepared to rest your approval of it, seeing that the answers to these interrogatories (agreeing in that particular with other answers received by this and the Foreign Department from almost all parts of the world,) would seem to reject the notion that the disease is contagious.

I have, &c.
(Signed) NEWCASTLE.

Governor Keate,
&c. &c.

DESPATCH from Governor KEATE to the Duke of NEWCASTLE.

No. 110.

MY LORD DUKE, Trinidad, 7th July 1863.

WITH reference to your Grace's Despatch No. 629 of the 11th June last, desiring an explanation of the reply made by Dr. Murray to the Interrogatory No. 11, respecting the disease of leprosy, whether persons afflicted with leprosy are permitted in Trinidad to communicate freely with with the rest of the community, or whether there is any restriction or segregation enforced in respect of them. I have the honour to forward a copy of Ordinance No. 7 of 1841, "For establishing an "asylum for indigent lepers, and providing for their "care, maintenance, and support." This is the only law existing in the island on the subject, and by a reference to its fifth section, your Grace will perceive that it is only lepers wandering about begging alms or exposing their persons in public places who are liable to be sent to and detained in the asylum by magisterial authority.

Any others are admitted on their own application, and until so admitted they communicate freely with the rest of the community. I understand Dr. Murray to have intended by his answer to this interrogatory to express his personal opinion that many indigent lepers are still at large, but if such is the case they must commit certain overt acts to bring them within the scope of the clause to which I have referred.

I have, &c.
(Signed) ROBT. W. KEATE.

His Grace
The Duke of Newcastle, K.G.
&c. &c. &c.

No. 7.—1841.

AN ORDINANCE enacted by the Governor of the Island of Trinidad, by and with the advice and consent of the Council of Government thereof, for establishing an Asylum for Indigent Lepers, and providing for their care, maintenance, and support.

(L.S.) H. MACLEOD.

Governor and Executive Council to determine where an Asylum for Lepers shall be situate.

WHEREAS the contagious disease called leprosy, has of late years increased in this colony, particularly in the neighbourhood of the town of Port of Spain: And whereas it is expedient to make provision for the public care and maintenance of persons so afflicted: Be it therefore enacted, and it is hereby enacted, declared, and ordained by His Excellency the Governor and Commander-in-Chief in and over the said island and its dependencies, by and with the advice and consent of the Council of Government thereof, That it shall and may be lawful for the Governor of this colony, by and with the consent of the Executive Council, by proclamation under the hand and seal of such Governor, to appoint a place within this colony as an asylum for persons afflicted with leprosy, and to determine and declare the extent, limits, and boundaries thereof, and from time to time, if occasion shall require, to change the place or alter the limits and boundaries of such asylum.

Buildings to be erected there.

II. And be it further enacted by the authority aforesaid, That it shall and may be lawful for the Governor to erect or cause to be erected at such place, such houses and other buildings for the reception of lepers, and for the use of the persons in charge of such lepers as the said Governor, by and with the advice and consent of the Council of Government, shall consider to be fit and proper for such purposes, and to cause the expenses thereof to be defrayed by the Colonial Treasury.

Appointment of Visiting Physician, Nurses, &c.

III. And be it enacted, That it shall and may be lawful for the Governor to appoint a visiting physician of such asylum, and also to appoint some fit and proper person as the resident inspector of such asylum, and also such number of nurses and attendants, with such salaries and allowances as the Governor, by and with the advice and consent of the Council of Government, shall from time to time see fit, for the superintendence and care of the residents at such asylum.

Applications for Admission.

IV. And be it further enacted, That immediately after such proclamation as aforesaid, every person resident in this colony, and afflicted with leprosy, shall, on his or her application to the visiting physician, be entitled to admission into and be received as an inmate of such asylum.

Lepers wandering about begging alms or exposing their persons in any public road, &c., how to be dealt with.

V. And be it further enacted by the authority aforesaid, That immediately after such proclamation, it shall and may be lawful for any justice of the peace, upon information on oath of any credible witness, that any person afflicted with leprosy has been seen wandering about, begging or collecting alms, or exposing his or her person in any public road, street, or place, to summon such person to appear before any two justices of the peace of the district, or if he shall think it necessary to issue a warrant under his hand, directed to any constable, authorizing and directing such constable to cause such person to be brought before any two justices of the peace at a time and place to be specified in such summons or warrant; and of such two justices of the peace, the stipendiary justice of the district shall in all cases be one; and if it shall be made to appear to the satisfaction of such two justices upon the oath of any medical practitioner, duly admitted to practise in this colony, that such person is afflicted with leprosy, and upon the oath of such medical practitioner or of some other credible witness or witnesses, that such person has been seen wandering abroad begging or collecting alms, or exposing his or her person in any public road, street, or place, then it shall and may be lawful for such justices of the peace to make an order directed to any constable or officer of police, and to the resident inspector of such asylum, ordering and directing such constable or officer of police to remove and convey such person to such asylum, and authorizing and directing the resident inspector to keep and detain such person as an inmate of such asylum until he or she shall be discharged by order of the Governor as hereinafter mentioned.

Discharge of Patients.

VI. And be it enacted, That whenever it shall appear to the visiting physician of such asylum that any inmate of such asylum has been altogether cured of such leprosy, or that the disease has been so far cured that the patient may be discharged from the said asylum without danger to the public health, such visiting physician shall certify the same under his hand to the Governor; and thereupon it shall and may be lawful for the Governor, by order under his hand to the resident inspector of the asylum, and to be endorsed on such certificate of the visiting physician, to direct that such person shall be discharged and removed from the asylum.

Governor and Executive Council to frame Rules for Government, &c. of Asylum, Care of Inmates, &c.

VII. And be it further enacted, That it shall and may be lawful for the Governor, with the advice and consent of the Executive Council, from time to time to make rules for the government and superintendence of such asylum, and for the removing and conveying persons to such asylum, and for the classification, distribution, and location, care, and superintendence of the inmates thereof, and for the providing them with food and clothing, and for the allotment of portions of garden ground for the growth of provisions to such of them as may be capable of working, and for the separation, either solitary or otherwise, of any of the said inmates from the rest, within some place to be appointed as a place of greater seclusion, and for such times as shall be specified in such rules, and of all persons guilty of any breach of any such rules, and also for regulating the attendance of the visiting physician, and ascertaining the duties of the resident inspector and nurses, and attendants to be employed at such asylum; and if they shall think it necessary, for preventing and prohibiting, or restricting all persons in boats from landing at the said asylum, or any part thereof altogether, or except at certain specified places, and at certain specified times; and it shall be lawful for the Governor, with such advice and consent as aforesaid, from time to time to annul and revoke, or vary and change such rules, or any of the same, and to make others in lieu thereof, and a copy of such rules shall be laid before the Council of Government at the next meeting thereof.

Fine for unlawful Removal from Asylum.

VIII. And be it further enacted, That if any person, not being an inmate of such asylum, shall aid, assist, or abet any inmate of such asylum in removing or attempting to remove from such asylum.

until he or she shall, upon the certificate of the visiting physician, have obtained the order of the Governor for his or her discharge, every such offender shall, on conviction before any two justices of the peace, of whom the stipendiary justice of the district shall in all cases be one, forfeit and pay such fine not exceeding twenty pounds sterling, or be imprisoned in the Royal Gaol for such time not exceeding two calendar months, with or without hard labour during the whole or such part of such imprisonment as to the convicting justices shall seem fit.

Annual Returns to Council of Government.

IX. And be it enacted, That the resident inspector of such asylum shall, on the 31st day of March, the 30th day of June, the 30th day of September, and the 31st day of December in each year, make up a true and correct return in writing under his hand, which return shall be laid before the Council of Government at its next meeting after the day of the date of such return ; and in such return shall be specified the names, sexes, and ages of all persons who shall have been inmates of the asylum during the whole or any part of the preceding three months, and the days on which such persons shall have been received into the asylum, and also any alteration which shall have taken place in the number of such inmates by death, or discharge, or otherwise, during the preceding three months ; and in such return shall also be specified the nature and quantity of all provisions, clothing, and medicines received for the use of such asylum during the preceding three months, and the application and distribution of the same ; and on such return the colonial treasurer for the time being shall endorse a return of all monies issued and paid by him for the use of such asylum during the period mentioned in such return.

When Ordinance shall come into operation.

X. And be it enacted, That this Ordinance shall come into operation and take effect from and immediately after the promulgation thereof.

Passed in Council this second day of August, in the year of our Lord one thousand eight hundred and forty-one.

THOMAS F. JOHNSTON,
Clerk of Council.

The foregoing Ordinance has been duly proclaimed in Port of Spain on this sixteenth day of August one thousand eight hundred and forty-one, by me,

RICHARD JOELL,
Assist. Marshal.

ANTIGUA.

REPORT of the late Acting Registrar General of Births and Deaths for the Year 1862.

To His Excellency Col. STEPHEN J. HILL, C.B., &c. &c.

SIR,

I HAVE the honour to submit to your Excellency the Abstract of Births and Deaths for the year 1862. The decrease in the number of births and the increase in the number of deaths are very striking features in the returns. The decrease of births is 256. The increase of deaths is 335, as compared with the year 1861.

On reference to the tables of preceding years, I find that in the year 1857, the births recorded were 1,515, while those of 1858 were 1,273, a decrease for the year of 242. I can trace no cause whatever for the remarkable peculiarity of those years in respect to the apparent deficiency of births.

Referring to the possibility of omissions to record births and deaths, I have endeavoured to test the accuracy of the returns to the Registrar by returns of baptisms and burials throughout the colony. For these I am indebted to the courtesy of the Lord Bishop of Bishop Westbury, and of the Reverend James T. Hartwell, and by them I find that the baptisms were as follows :—

	1861.	1862.
Church of England -	790	676
Moravians - - -	225	198
Wesleyans - -	80	73
Total -	1095	947

Showing a deficiency for the year 1862 of 148 baptisms. The comparatively small number of baptisms of Moravians is explained by the fact that legitimate children only are baptized by that church. The deficiency of births is to a certain extent thus confirmed by the evidence of the baptismal returns. The increase in the number of deaths, however much to be lamented, is explained by the prevalence of measles and of whooping cough, which occasioned great mortality among the infant and juvenile classes, and in the latter part of the year, of small pox, which, though of a comparatively mild type, developed itself in some cases with great severity, and consequent loss of life.

If the testimony afforded by the tables of 1862, viz. a deficiency of 666 in an aggregate population of 36,412, were to be taken as evidence of the state of facts ordinarily existing, it would be clear that in the absence of epidemic and contagious diseases there was something both physically and morally wrong in the constitution of the colony, and that there was ground for just apprehension that the population was in a course of rapid extinction. Happily, however, the year 1862 was certainly an exceptional year. The registration of births and deaths commenced in 1857, and by the returns for five years from 1857 to 1861 inclusive, the births were 6,760, the deaths 6,645, showing in place of the depopulating decrease of 666, an increase of 115 ; while by the returns of baptisms and burials for the same period, the baptisms were 5,594, and the burials 5,375, showing an increase of 219. Again, by the census of 1856, the population was 35,408, and by that of 1861 it was 36,412, showing an increase of 1,004, from which, deducting 235, the number of persons engaged in shipping, a class not included in the census of 1856, we have an apparent increase of 769.

But although it does not therefore appear that the population is decreasing, it is very disturbing to find that it is not increasing in the proportion in which it unquestionably ought to increase in a country where, to use the words of Governor Eyre, "the climate and "other conditions propitious to life are so favour-"able ;" and of Governor Hamilton, "where the "climate is favourable and the wants of life com-"paratively few."

This stationary condition may be owing to a deficiency of births, or, if there be the fair ordinary number of births, to an undue proportion of still-born, or of infantile deaths, or to a mortality generally, without respect to particular classification, in excess of births, or to one or more of these various causes.

The African race is naturally prolific, and it is important to remember that the distribution of the sexes by the census was in favour of females, the numbers being as follows :—Males 16,742, females 19,670. The registration tables for the five years from 1857 to 1861 inclusive, setting aside the year 1862 as an exceptional year, show the number of births to have been in the aggregate 6,760, in a population which may be taken at the medium number of 36,000.

This establishes for the five years a rate of 18·78 or 3·75 per cent. per annum, which contrasts favourably with that of England, which for the year 1859 was 3·504, for the year 1860 was 3·437, both being above the average for ten years, which was 3·417 ; but it is not so satisfactory a result as might have been expected considering the combined advantages

of climate and of the facilities of life, of the natural fecundity of the African race, and of the preponderance of females over males. The birth rate of 1862, taking the population at 36,500, was 2·93. Of the aggregate number of births for five years, viz. 6,760, 749 were still-born, being at the rate of 11·8 per cent., or one in every nine, while in Europe the mean proportion of still-born children is stated to be one in every 22 births. In the year 1862, however, of 1,072 births, 114 only are returned still-born, as opposed to 161 for the year 1861, a great improvement if the returns can be relied upon.

Of the aggregate number of births for the six years, viz., 7,832,—3,647 were legitimate, and 4,185 illegitimate, the latter being not only equal to but in excess of the former by 538, or nearly seven per cent., the proportions being of legitimate 46·57, and of illegitimate 53·43 per cent.

In England, in 1860, from a population of 19,902,918, there were 684,048 births; of this number 640,355 children were born in wedlock, and 43,693 were illegitimate, the former being of the aggregate births 93·61, and the latter 6·39 per cent.

The deaths of all ages for five years were 6,645, but this included the number of still-born for the same period, which should not be included with those persons that have lived and breathed. Deducting this number, 749, we have 5,896, or an annual average of 1,179, which, in respect to a mean population of 36,000, establishes the general death-rate of 3·27 per cent. In England it is 2·124.

The deaths of children of one year and under, for five years, were 2,157, and excluding the still-born, 1,408 or an annual average of 281, which, in respect to 1,179, the deaths of all ages, establishes a per-centage of 23·83, as opposed to the rate in England, which is about 22 per cent., and in respect to 1,202, the average births, excluding the still-born, would show that of every 100 children born, 23·37 die within the year, as opposed to 15 in England.*

Upon considering the foregoing statements, attention is forcibly attracted to the number of still-born as compared with living births, and the number of illegitimate as compared with legitimate, contrasting so strongly with similar returns in the mother country, and constituting as they do dark blots in the registration annals of the colony. It has been suggested with reference to the former that the engagement of women in laborious agricultural operations, and sometimes to a late period of pregnancy, may induce both premature and still-born births; the practice, however, is not confined to Antigua, but prevails throughout the West Indies, and without the baneful consequences ascribed to it in this island.

I am rather disposed to consider that the evil is partly owing to its associate evil, the degrading standard of moral habits evinced by the unprecedented prevalence of illegitimacy, and partly to the absence of skilled attendance in the hour of travail. Where the marriage tie prevails in its strength and purity, the wife, in the anxious period of pregnancy, is the subject of more than ordinary solicitude, and in confinement receives the necessary professional assistance, while the infant, welcomed with parental affection, is treated with every care and attention. But in the case of the unmarried female, living comparatively without restraint, pregnancy is the advent of confusion, of increased expense, and personal inconvenience.

Without any certain claim for particular sympathy, deprived of the power of earning her ordinary rate of wages at the very time she requires extra means, the natural feelings of the mother are brought into conflict with the difficulties of her position, and it is to be feared (and such is the impression of professional men) that the temptation to relief but too frequently leads to the sacrifice directly, or indirectly, of the infant, and hence one contributing cause of the undue number of still-born.

The want of medical men in the country districts and remote villages, and the consequent apprehension of the loss of life, more particularly among infants, and the aged and infirm, led to the passing of the Act to provide gratuitous medical attendance for those classes of the labouring population, the appointment of district medical officers, and the establishment of a fixed scale of charges for attendance. But notwithstanding the facilities thus afforded, and the reduced charge of sixteen shillings for midwifery cases, there is reason to believe that in the majority of instances both mother and infant are denied the benefit of professional attendance, and are left to the handling of the rudest and most ignorant women, who for a small compensation undertake and are permitted to perform the responsible office of midwife with perfect immunity as to consequences.

It is obvious that under such treatment, even with honesty of purpose, the chances are greatly against both mother and child; and when it is considered, that where the infant, if born alive, is regarded as an obnoxious incumbrance, the agency of such a class would be readily available, we may in some degree account for the condemning number of still-born, and the deaths of infants in the earliest stage of life.

The withdrawal of a large proportion of the population formerly resident on estates to establish themselves in the city, and in villages in remote parts of the country, has led to a mischievous overcrowding of dwellings, sometimes situate in unfavourable localities, insufficiently drained, and giving rise to intermittent fever. In many cases, secluded from public observation, the inhabitants of these villages in place of progressing have retrograded in manners, and hence a state of demoralization as injurious to society as compromising to the character of the island. There are churches and chapels, Church of England, Moravian, Wesleyan, Catholic, and Presbyterian, and there are able and zealous ministers of religion. Schools are established in every direction. Gratuitous medical attendance is provided for the old and the young; and yet, contrary to all experience, with every advantage of climate, of the facilities of life, of education based upon religious teaching, immorality is in the ascendant, and the population is at best but stationary. These evils are, I fear, beyond the pale of legislation. A close supervision, however, on the part of the ministers of religion and their assistants, would tend to a house-to-house acquaintance with the people and a personal knowledge of their mode of life, and afford opportunity of combating with much that is wrong, morally and socially, in their every day habits. Many of their dwellings do not afford sufficient accommodation for the number of inmates, hence a very imperfect separation is maintained between the sexes, leading to violations of the decencies of domestic life. This is an evil which is especially felt in cases of confinement, and it would be a great advantage, therefore, if one or more lying-in houses could be provided, and competent midwives obtained from the Lying-in Hospital in Dublin to superintend them, where for the smallest possible charge the the necessary accommodation might be afforded to patients. One such establishment in every parish would be productive of much positive good, and simultaneously suppressive of much positive evil. The population of St. Christopher was, by the census of 1855, 20,741, and by that of 1861, to

* Dr. Nicholson, in his valuable report to Governor Hamilton, estimates the deaths of infants at a higher rate, but his calculation included the still born. By a return of burials generally, and of infants of one year and under, in the Church of England, for five years, 1857 to 1861 inclusive, the former were 3,584, the latter 696, giving a per-centage of 19·41, as opposed to 22 per cent. in England. The baptisms were 4,138, showing, with 696 burials, 16·82, as opposed to 15 per cent. in England.

These tables would show that the mortality which prevents the natural increase of the population is not, as generally supposed, to be traced to any undue infant mortality.

which I have not access, I am informed that it had increased at the rate of nearly 500 per annum.

The population of Barbados in 1851 was 135,939; of these 18,000 fell victims to the cholera in 1854, and yet the population had increased in 1861 to 152,727, at the rate of nearly 3,500 per annum.

If Antigua progressed at the same rate, and there is no assignable cause why she should not, her natural increase of population would in course of time furnish an immigration of the best quality, and at the cheapest rate.

I have, &c.

(Signed) James W. Sheriff,
Late Acting Registrar.

Report of the Registrar-General of Births and Deaths for 1863.

Colonial Secretary's Office, Antigua,
February 9, 1864.

Sir,

I have the honour to forward to your Excellency the returns of the Registrar-General for the year 1863. I also append tables of the annual number of births and deaths for the last seven years, and of other statistical information bearing upon the returns now under consideration.

2. The total number of births registered in 1863 is 1,407, against 1,072 in the previous year. Excluding the still-born, the registered births for 1862 and 1863 would respectively be 958 and 1,220, showing an increase of 27·35 per cent. Of the births in 1863, 40·9 per cent. are returned as legitimate, and 59·1 as illegitimate.* The still-born are returned at 187, or 13·29 per cent. of the total births. In 1862 the number was returned at 114, or 10·64 per cent. of the births. The birth-rate for the year is 3·35 per cent., or one birth to every 29·84 of the population.†

3. There has been a slight decrease in the number of deaths as compared with 1862, 1,734 deaths having been registered in 1863, against 1,738 in the preceding year. Excluding the still-born (which in this colony are registered as deaths), the returns for the two years would be 1,624 and 1,547, showing a decrease of mortality in 1863 of 4·74 per cent. The annual mortality for these two years has, however, been 38 and 31 per cent. higher than the average mortality for the years from 1857 to 1861, and the deaths in the past year have exceeded the deaths in 1859 by 40 per cent.†

4. The death-rate for 1863 is 4·24† per cent., or one death to every 23·53 of the population.‡

5. Of the 1,734 deaths registered in 1863, 566 were of infants of one year and under, or 40·2 per cent. of the total births. This, however, includes the still-born; exclusive of these, the deaths among infants of one year and under were 379, or 31·06 per cent. of the births.

6. The centesimal proportion of deaths to the total population, according to the classification of ages observed in these tables, is as follows :—

One year and under - - -	24·5
One year and under 14 - -	11·7
Adults - - - -	63·8

7. The highest rate of mortality appears to prevail in the parish of St. John, in which 849† deaths were registered for the year, equal to a death-rate of 5·2 per cent., or one to every 19·23 of its population. The lowest in the parish of St. Peter, the death-rate for which is 2·45 per cent., or one to every 40·8. The returns for the past quarter show 286† deaths in the parish of St. John, a mortality at the rate of nearly seven per cent. on the population of the parish.

8. In three parishes, namely, St. Mary, St. Paul, and St. Philip, the births† in 1863 have exceeded the deaths† by 14—8, and 6, or 11·52, 5·75, and 4·47 per cent.; whilst in the parishes of St. John, St. Peter, and St. George the deaths have exceeded the births by 317, 9, and 29, or 59·6, 6·52, and 22·8 per cent.

9. The centesimal proportion of deaths among infants of one year and under to the total births for the year† is as follows, in the six parishes :—

St. John - - -	33·08
St. Mary - -	27·205
St. Paul - - -	26·53
St. Philip - -	25·71
St. Peter - - -	34·058
St. George - -	34·64

Showing the mortality among infants in the parishes of St. John, St. Peter, and St. George to be in much greater proportion than in the other parishes.

10. The returns for the last quarter exhibit a still more alarming rate of mortality among infants in all the parishes, but particularly in the three before specified, viz., St. John, St. Peter, and St. George. In the latter parish the infant mortality has reached the fearful proportion of 75 deaths to every 100 births† during the quarter.

11. The following table will show the deaths among infants of one year and under for all the parishes in the island during the past quarter :—

Parish.	Registered Births, including Still-born.	Still-born.	Total Births, excluding Still-born.	Deaths 1 Year and under, exclusive of Still-born.	Centesimal Proportion of Deaths among Infants of 1 Year and under to total Births, exclusive of Still-born.
St. John - -	175	21	154	73	46·75
St. Mary -	44	6	38	14	36·84
St. Paul - -	53	7	46	18	39·9
St. Philip -	54	3	51	19	37·25
St. Peter - -	48	5	43	19	44·18
St. George -	38	3	35	26	74·28

12. With reference to the great mortality existing generally, but more especially among infants, in the parish of St. John, I would respectfully call attention to the recommendation made some time ago by the Governor, that the parish of St. John should be divided into two medical districts. There cannot be a doubt but that it is impossible for one medical officer to attend to the wants of a district extending over some 13,000 acres, and with a scattered population of 16,324.

13. The results of the tables now under consideration certainly suggest the expediency of at once affording greater medical assistance to the inhabitants of the parish of St. John.

14. The discharge of the various official duties devolving upon me since my arrival in the colony in May last has up to this moment prevented my visiting any of the country districts; I have, therefore, been precluded from acquiring information, by personal observation, as to the causes inducing this diminution within the two last years of the native population of the colony. I am, however, informed by persons of experience, and possessing great local knowledge, that the prevalence of the small-pox during the greater part of 1862 and in the beginning of 1863, and the visitation in the latter year of one of the severest droughts on record, have, with perhaps other causes, produced a degree of distress and destitution never before witnessed in Antigua.

* There has been of late years a considerable diminution of marriages; in 1840 they numbered 554; in 1863 they dwindled to 163. *Vide* Return No. 14.

† Exclusive of still-born.

‡ The death-rate among the white population was 3·91; among the coloured it was 4·89; and among the black it was 4·12. According to the Census in 1861, the population consisted of 2,556 whites, 6,619 coloured persons, and 27,237 blacks.

15. Dr. O'Kearney, the registrar and medical officer of St. John's, reports as follows on the causes of mortality in his district:—"This district is at present free from small-pox, the hospital for reception of persons suffering from that disease having been closed on the 13th of October 1863. The total number of cases which occurred in the parish of St. John from the recognition of the disease on the 19th September 1862 was—

"In my own practice -	1,136
"In Dr. A. Nicholson's -	600
	1,736

"The number of deaths has been 129; the number of children under 10 years of age attacked has been in very small proportion to the whole number, a circumstance to be attributed to compulsory vaccination. In some instances the disease occurred after successful vaccination, in a modified form, and was found very amenable to medical treatment.

"Of the deaths occurring amongst adults most were attributable to pustular eruption of the fauces and commencement of the air passages; in four the proximate cause was delirium tremens brought on by privation of the accustomed stimulants; and in three was owing to complication with syphilis and consequent gangrene.

"It is deserving of remark that though the disease did not prove immediately fatal, I have reason to believe that in many instances in which recovery has occurred it has seriously impaired the constitution of the sufferers, and rendered them an easy prey to diseases of subsequent occurrence, and that, taken in conjunction with long-continued drought and depressed circumstances, a proportion of deaths during the past quarter may be fairly attributed to its remote influence.

"The condition of the labouring class in this district as regards midwifery attendance is deplorable in the extreme; in fact, the question may be well raised whether the poor would not be better left to the resources of nature than committed, during the trying period of child-birth, to the care of the uneducated and mercenary class who make profession of midwifery skill. In the country districts, and also in the city of St. John, the midwives generally belong to a class of persons who from age or infirmity are incapacitated from other work, and who with equal rashness and ignorance too often have recourse to practices incompatible with safety to mother and child. It would be easy to instance cases of examples of bad results of recent occurrence bearing upon the important subject, should such be required.

"Uncleanliness and overcrowding of dwellings, at all times a fruitful source of disease and evils, which act most insidiously in debilitating the human frame, and rendering it incapable of resisting morbific causes, will be found to exist and prevail, as a general rule, throughout the city and country districts where the labouring classes are congregated.

"The weekly or more frequent assemblies at dancing houses, or so called 'rendezvous,' are also prolific sources of immoralities, debaucheries, and disease; and I have no hesitation in attributing many of the still-births in the district to this cause.

"Of cases which have come under my care during this and the preceding quarter, many have been certified by clergymen or magistrates to be poor and destitute, and I have found them in many instances to correspond to the description, and to be to all appearance in want of the necessaries of life; in others so certified I have found them living in apparent comfort and in the receipt of a weekly allowance from the Poor Law Board. Many of the first class alluded to required nourishing diet and domestic care, and necessaries more than medical aid or medicine; yet, so far as I can understand, no power of relieving their wants existed.

"With the exception of the occurrence of some cases of influenza, diarrhœa, and dysentery, the district may be considered generally healthy at present date."

16. Mr. Black, the medical officer for the parish of St. Philip, in his report for the quarter ended 31st December 1863, observes:—

"The labouring population generally are insufficiently fed, are careless of home comforts, and have very imperfect impressions of the absolute necessity and value of fresh air and ventilation for their health and comfort, and when attacked are soon prostrated. I have noticed in the cases of recovery from small-pox that for the want of nourishing food, wine, &c., they remain a long time feeble and languid.

"I think our population suffered, too, from the scarcity of provisions in the dry season."

17. The decrease in the native population since the taking of the Census in 1861 appears to be 1,068, or at the rate of nearly one per cent. per annum. Return No. 6.

18. The introduction into the colony in 1863 of 1,298 immigrants has raised the population to 230 in excess of the last Census returns. But this increase does not, I apprehend, materially affect the calculations in the tables submitted, as the importation of these immigrants was spread over five or six months in the latter part of the year, whilst the corrected population at the beginning of 1863 was but 35,671; the assumption, therefore, of an average population of 36,412 for the year is rather in favour of the colony than otherwise. Return No. 6.

19. After a careful consideration of the returns of the district registrars, I cannot concur in the opinion that the results of the registration table for 1861, 1862, and 1863, showing a decrease in the native population, are caused rather by the deficient return of births (especially in cases of illegitimacy) than by any great mortality among the people. The returns of the district registrars are, I consider, sufficiently accurate to render them valuable, not only for statistical but also for legal purposes. The country districts are not large, and as all the registrars reside within their districts, they naturally possess a knowledge of persons and localities which would enable them readily to discover any important discrepancy in their returns. No doubt is expressed as to the correctness of the returns of deaths. The returns of the Registrar-General of England strongly corroborate the accuracy of the Antigua return of births. The birth-rate for England in 1861 was 1 to every 29 living persons, that for Antigua, in 1863, 1 to every 29·84;* and the return showing that 59 per cent. of the total births registered in 1863 were illegitimate is in itself sufficient evidence that but very few of illegitimate births escape registration.

20. I would also notice that for the seven years from 1857 to 1863 the deaths have been in excess of the births by 869*, that the return for the same period of baptisms and burials registered by the clergy of the several religious denominations in the colony show an excess of burials over baptisms of 732, and that the registered births and deaths have exceeded the registered baptisms and burials by 527 and 673. I can only account for this disagreement in the returns by the supposition, founded on the official reports noted in the margin, that the difference represents to a great extent infants who, from premature birth, neglect, or unskilfulness on the part of the midwives, have died soon after birth, and before the rite of baptism could be administered, and as a consequence do not appear in the registers kept by the clergy. Report of the Registrar-General, Feb. 6, 1857. Report of the Committee to inquire into the sanitary condition of the Island, Sept. 9, 1861.

* * * *

I have, &c.,
(Signed) Edwin D. Baynes,
Colonial Secretary and Registrar-General.

His Excellency Colonel Hill, C.B.,
Governor-in-Chief.

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* Exclusive of still-born.

The following Table gives the ascertained causes of death among the population of Antigua in 1863 :—

Causes of Death.	Total No. of Deaths.	Centesimal Proportion to total No. of Deaths [1,547].	Complexion. Black. Centesimal Proportion to total Deaths [1,123].	Complexion. White. Centesimal Proportion to total Deaths [100].	Complexion. Coloured. Centesimal Proportion to total Deaths [324].
	Exeluding Still-born, 187.				
Zymotie, epidemie, endemic, or contagious or eruptive fevers	364	23·529	25·29	13	20·679
Dropsy, caneer, and other diseases of uncertain or variable seat	88	5·688	5·877	3	5·864
Tubercular diseases - - - -	175	11·313	9·8	8	17·6
Diseases of the brain, spinal marrow, nerves, and senses -	120	7·764	7·747	8	7·716
Diseases of the heart and blood-vessels - - -	50	3·233	3·65	3	1·851
Diseases of the lungs and other organs of respiration -	82	5·3	4·896	12	4·629
Diseases of the stomach, liver, and other organs of digestion	271	17·512	16·83	24	17·9
Diseases of the kidneys - - - - -	7	0·453	0·356	—	0·925
Childbirth, diseases of the womb, &c. - - -	22	1·423	1·246	3	1·543
Rheumatism, diseases of the bones, joints, &e. - -	14	0·905	0·89	1	0·925
Diseases of the skin, eellular tissues, &c. - -	48	3·104	3·561	3	1·543
Malformations - - - - - -	1	0·065	0·089	—	—
Premature birth and debility - - -	75	4·849	4·274	3	7·408
Atrophy - - - - - - -	30	1·933	1·335	4	3·394
Age - - - - - -	130	8·404	9·88	5	4·321
Sudden - - - - - - -	5	0·324	0·356	1	—
Violence, privation, poison, intemperanee, &c. - -	27	1·745	1·246	4	2·777
Still-born - - - - - - -	—	—	—	—	—
Causes not specified - -	38	2·456	2·670	5	0·925
		100·	100·	100	100·

The number of births and deaths, baptisms, and burials from 1857, when the present system of registration commenced, to 1863, will be seen from the following return :—

—	Baptisms.	Registered Births, exclusive of Still-born.	Excess of Registered Births over Baptisms.	Burials.	Registered Deaths, exclusive of Still-born.	Excess of Registered Deaths over Burials.
1857	1,200	1,357	157	1,025	1,188	163
1858	1,139	1,150	11	1,101	1,188	87
1859	1,123	1,208	85	1,002	1,103	101
1860	1,037	1,129	92	1,083	1,175	92
1861	1,095	1,167	72	1,164	1,242	78
1862	947	958	11	1,551	1,624	73
1863	1,121	1,220	99	1,468	1,547	79
Totals -	7,662	8,189	527	8,394	9,067	673

Excess of burials over baptisms from 1857 to 1863 - - - - - 732

Excess of deaths over births from 1857 to 1863 - - - - - 878

The increasing prevalence of concubinage appears from the following return :—

Marriages.

1836 -	329	1850 - -	168
1840 - -	554	1857 - -	234
1843 -	484	1863 - -	163

BRITISH GUIANA.

Despatch from Governor Hincks to Mr. Secretary Cardwell.

Government House, Demerara,
5th October 1864.

Sir,

I very much regret that so mueh delay should have occurred in transmitting the information required by the Duke of Neweastle's eircular Despatch of 28th August 1862. I have now the honour to transmit the eopy of a letter whieh I received yesterday from the surgeon-general (Doctor Manget), together with sundry doeuments as noted in the schedule to this Despatch. Prior to the reeeipt of the eircular I had appointed a eommission to inquire and report on the subjeet, and that eommission had taken steps to obtain information through various local authorities. The printed interrogatories were nevertheless extensively distributed immediately after their reecipt. The report of the eommission was prepared in time to be laid before the eombined eourt in April of this year, and I have had a eopy of it some time before me ready for transmission ; but as I knew that the queries had been answered by several of the medieal gentlemen of the colony, and especially by Doctor Reed, now deeeased, but who was surgeon to the Leper Asylum, I deferred transmitting the report until I eould send with it all the replies to the interrogatories whieh had been received. The subject is one of great difficulty, and the surgeon-general's thoughts and attention have of late been so occupied with the yellow fever epidemie that I have been unable until now to get him to send me the replies, together with his own remarks. I lose no time in transmitting all these doeuments.

4th Oct. 1864.

See Schedule.

A. Sub-Encl. ; 25th Apr. 1864

Enclosure C.

I have, &c.
(Signed) F. Hincks.

The Right Hon. Edward Cardwell, M.P.
&e. &c. &c.

Georgetown, 25th April 1864.

We the undersigned, appointed by his Excellency the Governor in the month of June 1862, commissioners to inquire into the "existence and progress of leprosy in this colony," must, before submitting the very meagre information which we have been able to obtain, draw his Excellency's attention to the difficulty attached to the questions which were to be the subject of their investigation,—questions which were such as to preclude from the very beginning any hope of their being satisfactorily answered.

To answer the first question, as to the existence of leprosy in this colony, we have had to rely entirely, save the personal knowledge we have of the prevalence of this disease, on hearsay, and the very imperfect reports of the several district inquirers. These reports, correct as they are as to the number of lepers in the colony, fully support what we apprehended, a natural reluctance amongst the people to admit that the disease existed or had existed in any member of their families, and a determined resolution to keep back information. We hesitate to give the numbers hereafter stated as even approximatively correct. It is, however, certain that leprosy exists in its worst form in British Guiana; and that there are many persons known and unknown who are labouring under this affliction.

The second question, as to the progress of leprosy in this colony, is one which it is evident cannot be answered without some data, as to the number of cases existing at some previous fixed period, being first obtained. Without such data no comparison can be made, no deduction drawn as to its progress.

The question is evidently put to elucidate the correctness of the statement so often made that leprosy was on the increase.

This question "as to its progress" is a hopeless one, and must remain so, unless mere popular clamour be considered sufficient ground to justify the assertion that leprosy has increased within, say, the last twenty-five years. That those who are suffering from this malignant disease expose themselves publicly more than they used to do, there can be no doubt; and it is more than likely that this greater exposure has led to the belief that the disease was increasing as to numbers. We cannot, however, but state that it is our opinion that leprosy is on the increase, although we must express our regret that we have no plausible reason to offer for such an opinion; and, moreover, we much fear that the information respecting the number of lepers now existing will be but a very imperfect statistical record by which to judge hereafter as to the progress of leprosy in British Guiana.

We do not think it is our province, nor is it our intention, to enter upon the "questio vexata" of the contagious or non-contagious nature of leprosy. This question must, however, be settled before any comprehensive and justifiable enactment could be passed for the disposal of the unfortunates who are afflicted with this direful malady. Any sanitary measures, which might be adopted to arrest if possible this loathsome disease, must rest altogether on the question of contagion or non-contagion,—a question to which we are not prepared to give even a qualified answer, notwithstanding the decision at which the Royal College of Physicians of England have arrived at, that leprosy was not contagious.

If leprosy be not contagious, no enactment to enforce separation of the afflicted is required. The disease must be considered and dealt with as with other diseases. Asylums and houses of refuge for the poor who will avail themselves of these establishments must nevertheless be kept up, for it would be but an act of barbarity to admit such persons into any of the charitable institutions where the indigent are received.

If leprosy be contagious, and thereby means be required to prevent contact between the healthy and the unclean, Ordinance No. 10 of 1858 is not sufficient. Complete separation must be enforced, not only by taking up those who expose themselves in the thoroughfares, but also by removing those (a far more numerous and dangerous class) who hide themselves and are the source of the spread of the disease, besides being a nuisance to their neighbours, from whom incessant complaints are received. An Ordinance to enforce the removal and seclusion of those only who are seen in the public thoroughfares would be delusive and lead to no practical good. We are, however, deeply impressed with the almost impossibility of passing and enforcing an enactment, which would lead to the most heartbreaking scenes, and to obstinate resistance on the part of relatives and friends of the afflicted.

Without any reference to the question of contagion, we would strongly recommend that adequate means be immediately taken to enforce the removal of all lepers who are seen in the public thoroughfares to the general asylum.

Every right-minded person will, we are persuaded, join with us in asserting that it is the duty of the public to provide every comfort to those unfortunates who may be separated from family and friends, a separation called for solely for the benefit of the public at large.

We are convinced that if kindness and commiseration were shown to these afflicted persons; if good and cheerful abodes, sufficient and varied food, with perhaps some few indulgences, were allowed to those labouring under this dreadful disease (considered by the great majority of the public as highly contagious), there would be far less reluctance from these persons to become inmates of an institution conducted upon the principles of humanity and sympathy.

We must also strongly impress upon his Excellency the necessity for a more complete separation of the sexes amongst the inmates of the Leper Asylum, as the means hitherto provided fall far short of what is required for that purpose.

At the time when the accompanying reports were received, there were in three counties the following numbers of lepers:—

	Males.	Females.	Total.
Berbice	80	56	136
Demerara	53	32	85
Essequebo	28	25	53
Georgetown	38	26	64
Leper Asylum	96	35	131
Total			469

The number of lepers on estates in Doctor Shier's report was 90. From this number about one third must be deducted, as those parties have already been entered in the inquirer's returns. Therefore add to the 469 + 60, and we have the total number, as far as we have been able to ascertain, of 529 lepers in British Guiana.

(Signed) E. T. A. Manget,
Surgeon-General.

(Signed) A. Houstoun,
Chairman, Poor Law Commissioners.

Public Hospital, Gegetown,
Sir, October 17, 1858.

The Secretary of State having decided that a Medical Commission should be appointed to inquire into the origin, nature, and history of leprosy in this colony, his Excellency the Governor has been pleased to appoint such commission, composed Dr. Shier, chairman of the Board of Poor Law Commissioners, Dr. Johnstone, health officer of the city and port of Georgetown, and myself.

I have, therefore, taken the liberty forward you a copy of the Queries sent by the Secretary of State, and to request that you will kindly co-operate with us in this difficult task, by giving us before the 1st of January next, your answers to said queries, and any other information on the subject that you may think

of importance in our researches. We are well aware of the great difficulty and even impossibility of answering many of the Queries, and therefore must apologize for the trouble we may impose upon you.

I remain, &c.

E. T. A. Manget, Surgeon-General,
Chairman of the Commission.

Queries,

To aid a Local Medical Investigation into the Nature, History, and Origin of the Leprosy, said to prevail among the Inhabitants of British Guiana.

1. Does Leprosy prevail indiscriminately among all classes of the population, or does it exist exclusively or chiefly among persons of a particular race, whether white or coloured ?

2. Does Leprosy prevail chiefly or exclusively in particular districts, or in districts possessed of a common character ? *e.g.*

a. Does it prevail chiefly on the seacoast or at inland places ?

b. Does it prevail most in elevated or low-lying situations, and if in low-lying places, whether is the lowness of site absolute in reference to the sea level, or comparative in relation to the surrounding districts ?

c. Does humidity of soil or of atmosphere influence the prevalence of Leprosy ?

3. Are the inmates of particular dwellings more or less liable to Leprosy, according to the character and position of their habitations ? *e.g.*

a. Whether dry or damp ?

b. Whether the floors be below, or on a level with, or elevated above the surrounding surface ?

c. Whether close and confined, or roomy and well ventilated ?

d. Whether or not overcrowded with inhabitants ?

e. Whether clean or dirty ?

f. Whether exposed to or free from malaria or the exhalations arising from any particular kind of decomposing animal matter ?

4. Are the habits of persons liable to Leprosy in any respect peculiar as regards either—

a. Diet ? *

b. Cleanliness ?

c. Dress ?

d. Occupation ? †

5. Does personal hardship,—as exposure to the weather, or privation, as deficiency of food or clothing,—appear to exercise any influence over the production or the development of Leprosy ?

6. What is the proportion of lepers to the population of particular districts, or to the number of persons belonging to the class in which Leprosy chiefly or exclusively prevails ?

7. What proportion do the deaths from Leprosy bear to the deaths from all causes ?

8. What are the symptoms and character of Leprosy as regards the external appearance, and its effect on the general health ?

9. Does Leprosy run through a regular course, and if so, what are its earliest symptoms, and what its subsequent progress ?

10. Does Leprosy manifest any tendency to a spontaneous cure, and if so, at what stage of the disease ?

10 *a*. What is the proportion of cures to the whole number of cases of Leprosy known ?

11. Does Leprosy commonly begin at any particular period of life, and if so, at what age do persons first become liable to it ?

12. Is Leprosy most frequent among males or females, or are both sexes equally liable to it ?

13. Is Leprosy limited to the skin, or does it also affect internal organs, particularly membraneous surfaces ?

14. If internal organs are attacked by Leprosy, what appearances do they present after death ? ‡

15. Is Leprosy frequently fatal, and if so, by what symptoms is the fatal result indicated, and what is the immediate cause of death ?

16. Does Leprosy generally attack persons who have hitherto enjoyed good health, or is it commonly preceded by a period of disordered health, or by some other disease, such as

a. Yaws ?

b. Syphilis ?

c. Secondary syphilis, whether hereditary or acquired ?

17. Does Leprosy show a tendency to attack successive generations of the same family, and if so, does it become developed at a particular period of life ; in persons of both sexes or in one sex only ; and if in one sex only, is this always the same, or does the sex of the sufferers vary in different families ?

18. If Leprosy appears to be hereditary, does it become developed, irrespective of the habits, residence, or occupation of the predisposed, or is it more liable to become developed in consequence of residence in a particular kind of district or dwelling, or of particular habits, diet, or occupation ?

19. If there is reason to consider Leprosy as capable of hereditary transmission, does it also sometimes or frequently occur in persons who cannot have derived the tendency to it either from their immediate or more remote parents ?

20. If Leprosy thus arises, irrespective of hereditary transmission, have the persons in such cases usually been in *immediate* contact with another leper at some time previous to the attack, or in *mediate* contact, as by lying in the same bed or wearing the same clothes ?

21. If a healthy person intermarries with a person who either is already or subsequently becomes leprous, does the healthy person contract Leprosy from cohabitation with the leper ?

22. If there is reason to suppose that Leprosy is sometimes contagious and at other times incapable of propagation by contagion, is the contagiousness exclusively manifested at any particular stage of the disease, or is it only contagious under particular circumstances ?

23. Supposing Leprosy to be sometimes contagious, does it become so only when associated with some other and infectious disease, as itch, yaws, or syphilis ?

24. Specify carefully the course of treatment at present followed in the hospitals of British Guiana ?

Sub-Enclosure A. No. 1.

An Ordinance to establish an Asylum for Lepers, and to provide for their Care and Maintenance therein.

Ordinance enacted by his Excellency William Walker, Esquire, Lieutenant-Governor and Commander-in-Chief in and over the Colony of British Guiana, Vice-Admiral and Ordinary of the same, &c. &c. &c., by and with the advice and consent of the Honourable the Court of Policy of the said Colony.

To all to whom these presents do, may, or shall come, greeting : Be it known—

Preamble. Whereas there is reason to apprehend that the disease called Leprosy has of late years increased in this colony, and it is expedient to make provision for the care and maintenance of persons so afflicted in certain premises at Mahaica which have been pur-

* The kind and quality of the food and drink used by lepers or by the class or race among whom leprosy is most prevalent should here be stated.

† Any peculiarity in the manner as well as the nature of the occupation should be explained.

‡ It would be desirable to append some detailed reports of *post mortem* examinations to the reply to this query.

chased by the Colony for the purpose of there establishing a general Leper Asylum for the colony of British Guiana: Be it therefore enacted by his Excellency the Lieutenant-Governor of British Guiana, with the advice and consent of the Court of Policy thereof, as follows:—

Governor may establish by proclamation a general Leper Asylum at Mahaica.

1. It shall be lawful for the Governor, by proclamation under his hand and seal, to be published in the "Official Gazette" and one other newspaper of the colony, to declare that the premises situate on the west bank of the Mahaica Creek, in the county of Demerara, and recently occupied as a military post, with the lands thereto attached, shall be, according to the extent, limits, and boundaries thereof, as defined by a diagram of the Crown Surveyor deposited in the Registrar's office for the counties of Demerara and Essequebo, a general asylum for lepers for the colony of British Guiana.

Leper Asylum to be under control of the Poor Law Commissioners.

2. The said asylum shall be under the general control and superintendence of the Poor Law Commissioners appointed under Ordinance No. 6 of the year 1855.

Appointment and salaries of officers.

3. It shall be lawful for the Governor to appoint a medical practitioner, a resident superintendent, and a sufficient number of nurses and attendants for such asylum, with such salaries and allowances respectively as the Governor and Court of Policy, with the financial representatives in combined court assembled, shall from time to time vote for such purpose.

Ward for patients capable of paying.

4. The Poor Law Commissioners shall set apart one or more wards of the asylum for the accommodation of persons afflicted with leprosy who, not requiring gratuitous relief, may be desirous of becoming inmates of the asylum, and such wards shall be kept distinct from the other wards of the asylum, and any person afflicted with leprosy producing a recommendation from any justice of the peace and paying in advance such monthly sum as shall be from time to time agreed upon between such person and the Poor Law Commissioners, shall be admitted into the said asylum, and shall be entitled to receive and enjoy all the advantages of patients in said asylum.

Admission of lepers afflicted with leprosy.

5. From and after such proclamation aforesaid, every person resident in this colony afflicted with leprosy and requiring gratuitous relief shall, on his or her application to the medical practitioner of the asylum, or on the order of the Poor Law Commissioners, or any two justices, made on the application of any person so afflicted, be entitled to admission into and be received as an inmate of such asylum, free of charge.

Leper exposing his person in any public place may be summoned before a stipendiary or special justice.

6. From and after such proclamation, it shall be lawful for any stipendiary or special justice of the peace, upon information on oath of any credible witness that any person afflicted with leprosy has been seen wandering about begging or collecting alms, or seeking precarious support, or exposing his or her person in any public road, street, or place, to summon such person to appear before him, or if he shall think it necessary such justice shall issue a warrant under his hand, directed to any constable or officer of police, authorizing and directing such constable or officer of police to cause any such person to be brought before him at a time and place to be specified in such summons or warrant.

On the hearing of the case, justice empowered to make an order of removal to the asylum.

7. If upon the hearing of the case it shall be made to appear to the satisfaction of the said justice, upon the oath of any medical practitioner duly admitted to practise in this colony, that such person is afflicted with leprosy, and if it shall be made further to appear upon the oath of some credible witness that such person has been seen wandering abroad begging or collecting alms, or seeking precarious support, or exposing his or her person in any public road, street, or place, then it shall and may be lawful for such justice, unless security be given as herein-after provided, to make an order, directed to any constable or officer of police, and to the resident superintendent of the Leper Asylum, ordering and directing such constable or officer of police to remove and convey such person to such asylum, and authorizing and directing the resident superintendent to keep and detain such person as an inmate of such asylum, until he or she shall be discharged by order of the Governor, as herein-after mentioned.

No such order to be made if security given for the treatment of the leper in private.

8. If upon the hearing of the case, the person so afflicted, or any one on his behalf, shall give security to the Poor Law Commissioners, by a bond to their satisfaction to the extent of ninety-six dollars, that such person shall be properly maintained and treated in private, and shall not be suffered to be at large or to endanger the public health, the said justice shall abstain from making an order of removal.

Leper, when cured, to be discharged from the asylum.

9. Whenever it shall appear to the medical practitioner of the Leper Asylum that any inmate thereof may be discharged without danger to the public health, such medical practitioner shall certify the same to the Governor; and thereupon it shall and may be lawful for the Governor to direct that such person shall be discharged.

Leper, although not cured, to be discharged on giving security for treatment in private.

10. If at any time any inmate of the said asylum, although not cured, or any person on his behalf, shall give security to the Poor Law Commissioners, by a bond to their satisfaction to the extent of ninety-six dollars, that such inmate shall be properly maintained and treated in private and shall not be suffered to be at large or to endanger the public health, the said Commissioners shall forthwith report the same to the Governor and obtain his order for the discharge of such inmate from the said asylum.

Power of appeal to a Judge of the Supreme Court.

11. In case any person ordered to be removed to such asylum, or in case any person detained therein, shall at any time be desirous of appealing from such order or such detention, such person may present a petition for appeal to any one of the Judges of the Supreme Court of the colony, without charge or expense, which Judge shall have full power and authority to inquire into such appeal and to cause such witnesses to be examined before him as he may consider necessary, and thereupon to make such order for the discharge of such person from the said asylum, or otherwise, as he may consider meet.

* * * * *

Punishment of any person assisting or abetting in the removal of an inmate of the asylum without authority.

13. If any person shall aid, assist, or abet any inmate of the Leper Asylum in removing or attempting to remove therefrom before he shall have obtained the order of the Governor for his discharge, every such person shall be guilty of a misdemeanor, and shall be liable, on conviction, to a fine not exceeding ninety-six dollars, or to imprisonment, with or without hard labour, not exceeding three months, or to both such fine and such imprisonment with or without hard labour; and all prosecutions under this section shall be instituted in the name of the Poor Law Commissioners, and may be heard and determined by the Inferior Court of Criminal Justice for the county of Demerara.

Punishment for wilful employment of any leper in sale of food.

14. No person afflicted with leprosy shall be in any way employed, whether for hire or not, in the preparation for sale or in the sale of any article of human food, and in case any such person shall be so employed the person knowingly employing him shall be guilty of a misdemeanor, and shall be liable, on conviction, to the same punishment by the aforesaid Inferior Court of Criminal Justice as is provided in the preceding section.

* * * * *

When Ordinance to take effect.

21. This Ordinance shall come into operation and take effect on the publication thereof.

And that no ignorance may be pretended of this our Ordinance, these presents shall be printed and published in the customary manner.

Thus done and enacted at our adjourned assembly, held at the Guiana public buildings, Georgetown, Demerara, this twenty-second day of March One thousand eight hundred and fifty-eight, and published on the twenty-fourth following.

WILLIAM WALKER.

By command of the Court.

J. GARDINER AUSTIN,
Acting Secretary.

MAURITIUS.

Despatch from Sir H. Barkly to the Duke of Newcastle.

Mauritius,
My Lord Duke, 5th January 1864.

Your Grace's Circular Despatch of the 28th August 1862 having been brought under my notice amongst the other subjects which were under the consideration of the Government at the time of my arrival, I immediately made inquiries as to the causes of the delay which had occurred in following up an inquiry which appears likely to be of such vital importance to the welfare of the inhabitants of this and other tropical colonies.

2. I was surprised to hear from the chief medical officers that but little interest had been displayed by the medical men of the colony in the investigation, and that he had been as yet unable to obtain answers to repeated references which he had made to them upon the subject.

Enclosure. Dr. Gordon to Colonial Secretary, No. 127-28-12, 63, (and enclosures).

3. He has since then, however, placed in my hands the replies which I now enclose, from five out of seventeen medical practitioners who were invited by him to offer their opinion, and though I shall hope to be able yet to obtain further information upon the subject, I think it is better at once to forward that which I have received, as the result of the experience of these gentlemen, for in the absence of any properly verified statistics, it is, I fear, unlikely that any very valuable addition will be made by this colony to the data which the College of Physicians are collecting for the purpose of their proposed report.

4. It will be seen that no public institution exists, or has ever existed in Mauritius for the reception of lepers, and it would appear comparatively useless to found one now, unless under far more stringent regulations—even if seclusion therein were not made compulsory—than could be adopted consistently with the present position of the population.

5. In the West Indies the lazarettos were everywhere abandoned as soon as emancipation took place.

6. A private institution, the hospital of St. Lazare, is carried on under the benevolent auspices of the sisters of charity, and the replies of Dr. Regnaud, its medical attendant, show that no less than 52 patients are at present under treatment in it.

7. Fortunately, however, leprosy has not increased in this island, according to the evidence now forwarded, nearly in proportion to the increase in the number of its inhabitants, notwithstanding the fact that a large part of the addition has been from India, where it is still very prevalent among the natives.

8. This is probably attributable to the greatly improved condition of the Mauritius labourer of late years, and it affords ground, I trust, for hoping that with more generous diet and cleanlier personal habits this loathsome disease will gradually die out here as it has done in modern days throughout Europe.

I have, &c.
(Signed) Henry Barkly.

His Grace
The Duke of Newcastle, K.G.
&c. &c. &c.

Documents relating to Leprosy in the Island last century.

Lèpre. An 8.

Isle de France.

Hôpital de la République.

Extrait du Registre des Procès-verbaux déposé au Bureau de l'Hôpital.

En présenee de Messieurs les Chefs de la Colonie.

Aujourd'hui, 4 Septembre 1781, en vertu des ordres de M. Chevreau, Intendant des Colonies, aux Isles de France et de Bourbon, nous, Commissaire des Colonies, préposé au détail et inspection des Hôpitaux du Roi en cette île, avons convoqué l'assemblée à l'Hôpital de Sa Majesté en ce port, de l'officier d'administration chargé du détail des dits hôpitaux, de l'aumonier, des médecins, du chirurgien-major, des chirurgiens aides-majors, des apothicaires-majors, et de la supérieure de sœurs hospitalières chargeé de la manutention des effets du dit hôpital, pour, en présence de Messieurs les Chefs de la Colonie, ainsi qu'en présence de MM. Mellis, commissaire-général, Heriard, contrôleur aux dites îles, rendre compte chacun en ce qui concerne de la situation des malades, et de l'état des réparations jugées nécessaires et ordonnées suivant le procès-verbal d'assemblée de premier Août dernier, à quoi procédant, tous ont unanimement dit, quant à la situation des malades, que leurs observations sont les mêmes que celles constatées par le sus-dit procès-verbal relativement aux aliments, aux remèdes et médicaments, aux bons soins, à la police et au bon ordre ils ajoutent que les anciens ulcérés et convalescents se rétablissent promptement et parfaitement à l'Hôpital de la Grande Rivière.

Ensuite l'officier d'administration chargé du détail des hôpitaux aurait observé que l'on travaille actuellement à la réparation des planchées des salles du dit hôpital.

Qu'on n'a point encore commencé les réparations des latrines et de la cour, non plus que le mur devant servir de clôture à l'avant-cour, et la salle des morts, dont la confection devait être donnée à l'entreprise.

Qu'il avait aussi ordonné que le laboratoire de pharmacie de l'hôpital serait agrandi, qu'on n'a pas encore commencé.

Qu'il est indispensable d'établir des vieilles aux fenêtres de la salle des vénériens qui font passer des boissons, aliments ou fruits par les barreaux des dites fenêtres, ce qui rend en partie inutile la précaution prise de les renfermer.

A quoi Messieurs les Chefs ont dit que les réparations et autres travaux seraient rappelés à Monsieur l'Ingénieur-en-chef pour s'en occuper selon les moyens qui lui restent en ouvriers et matériaux.

Les médecins et chirurgien-major auraient chacun lu un mémoire tendant à prouver que la maladie dont quelques blancs et quelques noirs de cette colonie sont attaquées, et qu'on nomme lèpre, n'est point celle des anciens, que c'est mal-à-propos qu'on s'en alarme, qu'elle n'est point communicative, et qu'elle peut être regardée comme un mélange des maux vénériens, scorbutiques, scrophuleux et dartreux négligés par les gens qui en étaient, ou en sont attaqués, ou qui ont résisté aux secours de l'art.

Messieurs les Chefs, satisfaits de l'exposé de ces deux mémoires, ont decidé qu'il en serait inséré un extrait dans les feuilles de la Gazette pour tranquilliser le public sur les alarmes.

Aucun autre officier de l'hôpital n'ayant rien eu à exposer ni proposer, nous avons dressé le présent procès-verbal qu'ont signé avec nous les principaux officiers du dit hôpital, et que Messieurs les Chefs ont visé pour servir et valoir ce que de raison.

Fait en la salle d'assemblée à l'Hôpital Royal au Port Louis, de l'Ile de France, les jours, mois et an que dessus. (Signé) Sœur, Vollanfants, Greni, Rochard, Becane, Ausermes, Deschamps, Hériard, et Déchauvalon et Mélis.

Au bas est écrit :

Vu par nous Intendant des Colonies aux Iles de France et de Bourbon. (Signé) Chevreau.

Mémoire présenté et lu à la dite Assemblée par le Chirurgien-Major.

Messieurs,

Le bien qui vous anime pour l'intérêt du Roi par une administration sage et prudente ne vous laisse rien oublier pour le bonheur des sujets confiés à vos soins, et vos vues de bienfaisauce pour seconder les intentions du Roi s'étendant sur des malheureuses victimes du sort, votre pitié et votre compassion vont jusqu'à chercher les moyens de leur procurer des secours et des asiles, pour n'être en spectacle à leurs semblables qu'ils sont déjà obligés de fuir, afin de leur épargner le dégoût de voir une maladie hideuse, et de ne leur plus laisser la crainte de la communication.

Cette maladie pour laquelle vous prenez le plus grand intérêt, qu'on nomme ici la lèpre, est l'objet des recherches que vous m'avez ordonnée de faire pour connaître seulement la quantité de blancs ou de noirs qui s'en trouvaient attaqués, de vous en rendre compte et d'y ajouter mes réflexions.

Suivant le rapport de MM. les chirurgiens traitans dans l'île, qui ont répondu à la lettre circulaire que je leur ai écrite, il existe dans cette île douze blancs et cinquante neuf noirs, sans compter douze qui ont existé soit disant abandonnés à leur malheureux sort.

Malgré ce petit nombre, qui se trouve de beaucoup inférieur à celui dont on vous avait fait le récit, ce ne serait pas moins un objet intéressant que par des ordres expresses vous forciez ces malheureux d'abandonner ce séjour, s'il avait du danger pour la communication et la propagation.

C'est un problème à résoudre si cette maladie est réellement la lèpre, si elle se communique, pourquoi elle accroit: ce ne peut être qu'après le plus mûr examen, et la plus scrupuleuse attention des gens de l'art de guérir, qui puissent s'en assurer, et qui ayant bien reconnu, 1° l'état des malades, 2° le genre de malade, 3° la cause qui la produit, 4° si on doit la regarder comme curable ou non.

Heureusement la lèpre décrite par les anciens, celle qui était communicative et contagieuse, désignée par le mot Eliphantiasis, est éteinte parmi nous depuis 3 à 4 siècles ; ce n'est que par des traditions, que nous en avons connaissance, qui se sont perpétuées jusqu'à nous et se perpétueront tant qu'il y aura des plumes et de presses même dans les siècles à venir, mais comme toutes les maladies dégénèrent, celle dont il est question ayant une fausse analogie à l'ancienne, on la désigne aussi sous l'ancien nom générique de la lèpre.

Ce serait l'objet d'un très grand travail d'un homme consommé à écrire, sur une maladie aussi épineuse qui celle-ci, surtout lorsqu'il est question de séquestrer des malheureux sous la simple idée que ce mal est communicatif, vous auriez de justes sujets de craindre, Messieurs, pour la colonie, les suites fâcheuses qu'elle pourrait entrainer, et qu'avec les sentiments d'humanité qui vous conduisent, on ne vous reprochât de n'être pas venus à temps, arrêter le progrès d'un fleau qui le serait pour quelque pays habité que ce soit ; mais puisque vous m'avez ordonné de m'en instruire, et de vous en rendre un compte exact, suspendez, je vous prie, votre jugement, avant de prononcer sur une maladie dont le nom seul fait horreur.

De la Lèpre des Auciens.

La lèpre, qui est une maladie de la peau qui l'intéresse en tout ou en partie, qui attaque les muscles, les os, occasionne des atrophies, ankyloses, perte de phalanges des extrémités tant supérieures qu'inférieures, forme sur la peau des tubercules rouges, farineux, souvent suppurans, d'odeur à alkali très fœtide. La peau souvent découpée en long, en travers, son siège le plus ordinaire est à la face, au cuir chevelu, aux oreilles, au nez, qui deviennent ou ulcéreux ou chancreux ou farineux, avec perte d'une ou de plusieurs de ces parties.

Elle se communique couchant ensemble dans le même lit, respirant le même air, dans la même chambre, se servant des mêmes hardes, des mêmes vaisselles, des alimens touchés ou préparés par des lépreux, c'est à peu près la description des ancêtres *si elle a existé*, sans compter qu'elle était manifestement héréditaire jusqu'à génération très reculées.

Les causes qui l'ont produite nous seront inintéligiblement transmises, et on ne peut guère asseoir un raisonnement certain. Le plus positif est que ces maladies reconnus tels étaient fuis et abandonnés comme il y a encore quelque pays ou on en fait autant, sans essayer d'y porter d'autres remèdes que l'éloignement de la société pour ces malheureux.

De la Lèpre de l'Isle de France.

La lèpre que je cherche à décrire est également comme celle des anciens par rapport à la couleur, aux tubercules rouges suppurants et farineux ; je n'y ajoute point des nodosités aux muscles, aux aponcuroses, aux tendons des exostoses, et perte de phalanges, c'est une maladie compliquée qui est d'un genre différent.

Son siège est également à la face, au cuir chevelu, aux cuisses et aux extrémités, tant supérieures qu'inférieures.

Les causes sont des gales, des dartres, du schrophul, de la vérole et de scorbut traités sans soins, sans préparations, sans dépurations, sans évacuations, seulement palliés avec des topiques qui ont répercuté l'humeur dans la masse du sang lorsque la nature cherchait à s'en débarrasser au dehors. De l'assemblage de plusieurs de ces vices naît une maladie qui porte un caractère différent de chacune de ces causes en particulier.

Cette maladie n'est point ici communicative d'après le rapport des gens de l'art qui l'ont suivie avec soin: un mari ou une femme, l'un ou l'autre attaqués de cette maladie, habitent ensemble, ont des enfants, celui qui est infecté de ce vice ne le transmet point à l'autre ni aux enfants issus de leur commerce ; il arrive cependant quelquefois qu'un ou deux de ces enfans en ayant quelque marque ; il faudrait être bien assuré qu'aucune autre cause que ce virus transmis à l'enfant ne tire pas son origine d'ailleurs ; si ce ne serait pas d'un mauvais lait sucé, et impregné de quelques virus, ou si la nature des alimens, en égard à la faiblesse des estomacs des enfans, ne pourrait pas de lui-même attaquer et vicier le sang, conséquemment la lymphe qui pourrait être le siège de ce mal.

Pour bien juger si cette prétendue lèpre est communicative il faut être bien sur qu'elle ne soit pas curable. L'expérience multipliée des chirurgiens qui ont traité ces sortes de maladies prouve évidemment qu'il y a des moyens de guérir. Un de ces messieurs dit en avoir traité douze, avoir reussi sur onze ; un seul a résisté aux remèdes. Beaucoup d'autres en ont guéri et en guériront encore, s'ils pouvaient fournir aux malades les alimens propres à rétablir la masse du sang, jointes aux remèdes employés sous différentes formes.

Il pourrait bien être arrivé que lorsque cette maladie a été nommé lèpre que le préjugé, qui de tout temps l'a fait regarder comme communicative et contagieuse, on ait abandonné ces gens à leur malheureux sort, sans secours presque pour la vie animale, les secours de l'art et les vêtemens ; c'est aussi ce qu'un chirurgien rapporte dans la lettre que depuis quinze ans il en a eu connaissance de douze qui ont été abandonnés et tout péris : la grande répugnance qu'on a eu pour une telle maladie a bien pu faire taire l'humanité.

Elle n'est pas communicative, parcequ'il n'y a pas d'exemple d'un maître ou d'une maîtresse attaqués de cette maladie, et dont leurs esclaves obligés de les habiller, déshabiller, laver leur linge, manger souvent les restes de leur repas, ont été atteints de ce mal. Sa communication gît donc dans l'imagination, et on

peut aisément rassurer la colonie, malgré que le nombre de ces lépreux soit augmenté.

Vous me demanderez peut-être, Messieurs, pourquoi cette maladie, qui n'est point communicative, s'est accrue si considérablement, et qu'il y a vingt ans qu'a peine on en connaissait un. La question serait difficile à résoudre, si je n'avais pour moi le même sentiment que j'ai eu plus haut; l'émigration des differents pays que s'est faite depuis ce temps, des noirs et négresses de Madagascar, dont la plus grande partie sont attaqués de schrophul et de variole; des Indiens et Indiennes de dartres, de gale et de variole; des Mozambiques de gale et de variole, tous d'un traitement très long et très couteux, qui souvent deviennent très onéreux au maître; ajoutez à cela l'indocilité des malades qui ne veulent pas s'abstenir à un régime et aux rémedes propres à diminuer dans les premiers temps le principe de leur maladie.

La facilité que le climat donne et le genre de vie qu'on mène ici, la communication des deux sexes et le changement varié parmi les esclaves, doit nécessairement vicier les humeurs au dernier degré. Il faut donc regarder cette maladie, non comme un mal sans remèdes, et apporter seulement ses soins à donner de soulagement à ces malheureux, avant qu'ils ne parviennent à un dégre incurable, ainsi qu'il arrive dans presque toutes les maladies; le schropul, la vérole et les chancres nous sont des preuves que les maladies portées au plus haut période échappent à nos soins qui deviennent infructueux.

J'espère de ce que je viens d'avoir l'honneur de vous représenter que la soi-disant lèpre de cette île n'est pas plus dangereux que la gale, les dartres, le schropul, la vérole qui l'est beaucoup plus, la teigne, la pierre, le goître, et le cancer.

Je soumets d'ailleurs mes réflexions au jugement de Messieurs les médecins et chirurgiens du Roi. Si je n'ai pas rencontré juste, je ne croirai pas avoir démerité si on me prouve physiquement que je me suis égaré; quand on travaille de bonne foi pour l'humanité on ne peut craindre de dire ce qu'on pense.

Au Port Louis, Ile de France, le 4 Septembre 1781.

(Signé) Deschamps.

Mémoire présenté à la dite Assemblée par le Médecin: Recherches sur une Maladie connue sous le nom de Lèpre de l'Ile de France.

La maladie désignée sous le nom de lèpre dans cette île n'a de commun avec celle des anciens que d'attaquer la peau et de résister à tous les remèdes qu'on lui oppose.

Elle n'en a pas la contagion, puisque même, dans l'état de mariage, elle respecte celui des deux qui n'en a pas l'impression; transmise seulement par le sang, elle présente les mêmes caractères que le virus schropuleux et psorique, et parait être aux pays chauds et maritimes ce que ceux-ci sont aux pays froids et temperés. Les bords de la mer étant plus infesté que les autres lieux de cette maladie, on pourrait déduire les causes qui la produisent, du levain scorbutique poussée à son dernier période, uni aux dartreux, la manière de vivre commune aux habitants des côtes de tous les pays. L'usage de poisson salé, celui de cochon qui de tous les temps a été regardée comme capable de donner des maladies de peau, raison qui l'a fait ranger dans la classe des immondes par les législateurs qui ont cru devoir ajouter à la pureté de l'âme celle du corps encore plus utile à la santé des citoyens; joignez à cela l'intempérance des boissons spiritueuses et on aura les causes qui constituent le plus à son developpement, et il serait aussi difficile de l'anéantir que les vices, les régimes et les circonstances qui y donnent lieu.

Les Juifs isolaient les lépreux autant pour seconder la vengeance du ciel qu'ils croyaient se déployer sur eux, que dans la crainte de leur communication, prevenues comme ils l'étaient que l'Etre Suprême désignait, par quelques désastres, les hommes qu'ils vouaient à l'anathème.

Des temps plus éclairés ont vengé l'humanité des attentats exercés contre elle dans les siècles de superstition, et nous ne punissons plus les hommes des malheurs de leur tempérament et des circonstances qui ont ruiné leur santé; nous adoucissons leurs maux quand ils sont incurables, et il faut des circonstances extrêmes pour isoler des individus afin de prévenir la contagion. Je ne crois pas la maladie dont il s'agit assez dangereuse et de communication assez facile pour exiger ce sacrifice.

J'ai donné mes soins à plusieurs de ces malades; leurs domestiques et ceux qui avaient le plus de relation directe avec eux étaient très sains: je regarde comme causes les alarmes suscités à ce trajet. J'ai habité des îles de la côte de Bretagne; plusieurs habitants sont sujets à cette maladie. La côte de l'Inde offre aux yeux le même spectacle. La caste des parias compte beaucoup de cette espèce de lépreux, et la Chine dont nous admirons la police en fourmille.

D'après cet exposé on peut conclure que dans différents pays la même manière de vivre, et les mêmes circonstances produisent les mêmes maladies, et qu'il n'est pas plus possible d'extirper cette espèce de lèpre que la gale, le scorbut, les écrouelles, et le vice vénérien qui, séparement, tourmentent, les deux tiers du monde connue, puisque ces maladies tiennent au régime, aux vices de la société, autant qu'à la communication immédiate des individus.

La maladie dénommée lèpre dans cette colonie peut donc jouir de la tolérance dont jouissent celles que nous venons de nommer très communicatives et bien plus nuisible à l'espèce humaine.

Au Port Louis, Ile de France, le 4 Septembre 1781.

(Signé) Rochard.

Pour copie conforme à l'original deposé au bureau de l'hôpital.

(Signé) F. Bigaijudre.

No. 726.

4 Ventose, An 8

Maladie de Lèpre.

Assemblée Coloniale.

Séance du 4 ventose, au soir, an 8.

L'assemblée coloniale délibérant sur les diverses petitions à elle adressées au sujet des progrès que fait dans cette colonie la maladie appelée vulgairement lépre, et voulant á cet égard calmer les vives inquiétudes des citoyens, a arrêté et arrête.

Art. 1.

Dans quinzaine à compter de la promulgation du présent arrêté les officiers de santé exerçans seront tenus et les officiers de santé ayant exercé sont invités à donner leurs opinions motivées sur la maladie appelée vulgairement lèpre dans cette colonie.

Art. 2.

Aussitôt la réception du présent arrêté, les municipalités de chaque canton de l'île le notifieront aux dits officiers de santé domiciliés dans leur arrondissement à l'effet de s'y conformer.

Art. 3.

La notification faite les dits officiers de santé donneront séparément et par écrit leurs opinions sur la susdite maladie en repondant aux questions suivantes:

1ère Question.—La maladie appelée vulgairement lèpra dans la Colonie est-elle véritablement une lèpre?

2me Question.—Quelle que soit cette maladie, est-elle contagieuse ou non?

Art. 4.

Les avis par écrit et signés des officiers de santé sur les questions ci-dessus seront donnés par eux sous cachet aux municipalitiés dans leurs cantons, qui les feront parvenir en cet état au Directoire, lequel les adressera de suite à la commission intermédiaire.

Art. 5.

Tout officier de santé exerçant qui refuserait de donner son avis sera puni par la privation des droits de citoyen actif pendant deux ans.

Art. 6.

Les municipalités seront chargées d'employer les moyens les plus prompts pour l'exécution du présent arrêté.

Et sera le présent porté a la sanction du Gouverneur Général, lu, publié, imprimé et affiché dans le plus bref délai. (Signé) BESTEL.

Par l'assemblée Coloniale,
(Signé) F. A. CHANAL.

Plus bas est écrit :

Je consens, et ferai exécuter suivant la forme et teneur au Port N. O. Ile de France le 6 ventose, an 8 de la République Française une et indivisible.

Le Gouverneur Général. (Signé) MALARTIC.

Transcrit par moi, greffier du tribunal d'appel de l'Ile de France soussigné, oui et ce requérant le commissaire national au désir de l'arrêt de ce jour, 7 ventose, an 8 de la Republique Française une et indivisible.

(Signé) AUFFRAY.

No. 741.
Messidor, An 8.
Lèpre.

ASSEMBLÉE COLONIALE.

Séance du huit messidor, au matin, an 8.

L'assemblée sur le rapport fait à la commission intermédiaire par la municipalité du Port Nord Ouest, relativement au progrès d'une maladie appelée lèpre, et sur le danger qui résulte de laisser vagabonder les rues et les chemins les individus attaqués de cette maladie :

Arrête qu'elle charge le Directoire et la municipalité du Port Nord Ouest de s'éntendre avec les administrateurs généraux à l'éffet de déterminer un local convenable et sur, soit à l'hôpital, soit ailleurs, pour servir de réclusion aux individus qui sont attaqués de la lèpre :

Il est enjoint à toutes les municipalités de la colonie de faire arrêter tous individus attaqués de cette maladie qui seront rencontrés dans les rues et chemins pour être reclus dans le lieu qui aura été designé :

Et sera le prèsent porté à la sanction du Gouverneur Général, vu, publié, imprimé et affiché dans le plus bref délai.

(Signé) A. CHAUVET,
Président.

Par l'assemblée coloniale,
(Signé) R. DEMMEREN,
Sécrétaire.

Plus bas est écrit :

Je consens, et ferai exécuter selon la forme et teneur au Port Nord Ouest, Ile de France, le neuf messidor l'an huit de la Républiquc Française une et indivisible.

Le Gouverneur Général,
(Signé) MALARTIC.

Transcrit par moi, greffier du tribunal d'appel de l'Ile de France soussigné, oui, et ce requérant le commissaire national au désir de l'arrêt de ce jour, 15 messidor, an 8 de la République Française une et indivisible.

(Signé) AUFFRAY.

No. 742.
Messidor, An 8.
Lèpre.

ASSEMBLÉE COLONIALE.

Séance du huit messidor, au matin, an huit.

L'assemblée, sur la proposition de la commission intermédiaire, arrête que tous les Officiers de Santé excrçant ou qui ont exercé dans la colonie, sont tenus de faire parvenir dans le délai de quinze jours, et sous cachet, à la commission intermédiaire, le nom et la demeure de tous individus quelconques qu'ils auront reconnus être atteints de la maladie appelée lèpre ; de déclarer en même temps les circonstances de cette maladie qui peuvent être parvenus à leur connaissance, ses progrès sur chaque individu, et la manière dont ils ont été atteints de cette maladie, et si c'est par contagion ou génération.

Les contrevenants à la présente loi seront punis d'un mois de prison et de cent piastres effectives d'amende, au profit de la commune générale, et du double en cas de récidive.

Le présent sera porté à la sanction du Gouverneur Général ; lu, publié, imprimé et affiché dans le plus bref délai.

(Signé) A. CHAUVET,
Président.

Par l'Assemblée Coloniale,
(Signé) N. DEMMEREN,
Sécrétaire.

Plus bas est écrit :

Je consens, et ferai exécuter selon la forme et teneur.

Au Port Nord Ouest, Ile de France, le neuf messidor l'an huit de la République Française une et indivisible.

Le Gouverneur General,
(Signé) MALARTIC.

Pour copie conforme :

Le Gouverneur Général,
(Signé) MALARTIC.

Transcrit oui, et ce requérant le commissaire national au désir de l'arrêt de ce jour, 15 messidor, an 8 de la République Française une et indivisible.

(Signé) AUFFRAY.

MADAGASCAR.

The following extracts are from "An Account of Tubercular Leprosy in the Island of Madagascar," by Dr. Davison, founded on the notes of nearly a hundred cases of the disease treated in the dispensary at Antananarivo during 1862.

THE progress of tubercular leprosy may be divided into three stages. The first characterised by the appearance of spots, the second by tubercles, and the third by ulceration or falling off of the members. These three stages may co-exist simultaneously in different parts of the body ; thus, leprous spots may be seen on the trunk, tubercles on the face, and ulceration may be going on at the extremities.

The disease usually begins so insidiously that the patient is unable to state the precise period of its commencement. He probably discovers accidentally a small patch of his skin presenting a tint different from the rest of the body. Such spot may be seated anywhere, very frequently about the back or shoulders. It may be of any shape, but it is generally oval or circular, and varies in size from that of a sixpence to the palm of the hand. The first change in the colour is to a light brassy tint which, as the disease advances, becomes more distinct. The texture as well as the colour of the skin soon is affected. It becomes cracked, fissures running across the spots in all directions. The hairs upon the part become yellow and stunted, and after a time fall off, leaving the hair-bulbs empty, patent, and enlarged, especially on the face, so as to present one of the most diagnostic signs of the malady. So characteristic is this of leprosy, either as a latent diathesis or a developed disease, that I have never known a leper who did not present it ; nay more, I have often been able, from this condition of the hair follicles alone, to recognize members of a leprous family in whom the disease was yet latent.

The affected skin acquires a greasy look, as if it were glazed or varnished, and ceases to be perspirable. From an early period the spots become thickened, but are not at first elevated above the surrounding healthy skin. This thickening depends upon effusion into the subcutaneous cellular tissue. As the disease advances, the true skin becomes the seat of effusion, and is felt to be slightly elevated to the touch.

Sensation is at first heightened; slight wandering pains, and formication or itching may be felt over the body, or in the affected parts only. After a few months, this hyperæsthesia gives place to anæsthesia; thus it not unfrequently occurs that one or more of the older spots are decidedly numb and feelingless, while there is excited sensibility in the more recent ones. Some writers describe as a distinct variety a lepra anæsthesiaca; but anæsthesia is present more or less in every instance.

The second or tubercular stage supervenes upon the first with various degrees of rapidity, sometimes within a few months, at others after the lapse of years. The tubercles, usually of a dusky colour, smooth and distinct, begin to show themselves on the face. The lobes of the ears are thickened and irregular, and the whole external ear curved forwards toward the cheeks. The alæ of the nose grow heavy, the nostrils dilating, and the nose becoming flattened and studded with tubercles. The lips swell and are livid, the lower one more so than the upper, and the chin is lengthened and mishapen; the whole face bagged or puffy. The hands are livid as if from cold, the fingers swell, the arch of the foot becomes flattened by leprous effusion beneath the fascia. In fact, tubercles may appear in any part of the body, although they are most common in the situations mentioned. They affect also more or less the mucous surfaces. In the nose they give rise to difficulty of breathing and ozæna; in the larynx and trachea to laboured respiration, husky voice, and occasionally to aphonia.

As these changes are going on, ulceration begins to take place, commencing generally on the hands or feet. These become livid as if half frozen; the temperature is really lower than that of health. The nails grow dry, shrivelled, and fall without pain. Tubercles burst in succession, discharge a thin watery matter, and after a time dry up. Other ulcers form on the fingers close to the joints, and deep until the joints, already infiltrated by leprous effusion, their vitality all but extinguished, drop off. After the part falls away, the ulcer heals over for a time; thus member after member dies as it were on the yet living body, leaving the sufferer as helpless to himself as he is loathsome to those who have to minister to his wants.

The fatal termination in leprosy is often owing to some affection of the respiratory organs.

Dr. Davison relates numerous instances which prove the frequently hereditary nature of the disease.

Leprosy occasionally remains latent for at least one generation, and reappears in the next, as in the case of Manakavana, whose own parents were healthy but whose grandmother and sister were lepers. In all such instances, however, the leprous diathesis may be recognised in those who escape the fully developed disease. The signs of this diathesis are falling of the hair of the cheeks, and a patent condition of the hair follicles—loss of hair from the outer angle of the eyebrows—enlargement of the lobes of the ears—mental and physical torpitude.

Where a liability to the disease exists, exposure, overwork, grief, poor or bad diet, cold and damp, imprudence and debauchery, form determining causes; and, when it has taken hold of the system, these circumstances powerfully tend to aggravate it. As men are more exposed to the operation of these causes than women, we may account for the fact that women are less liable to the disease than men, and the well-to-do members of society than the poverty-stricken; while sobriety and care will tend to prevent its development or render its progress slower and milder.

The disease is looked on as a disgrace, and few will admit that it is real leprosy from which they suffer.

In the vast majority of cases an hereditary taint may be discovered.

The disease cannot be highly contagious in the ordinary sense of the word; for we constantly see husbands suffering from the disease living for years with their wives without communicating it, and vice versâ. It certainly deserves notice that, while the laws of Madagascar excluded leprous persons from society, the disease was kept within bounds; but after this law was permitted to fall into disuse, it has spread to an almost incredible extent. There is no doubt that this result is partly owing to lepers being allowed to marry without any hindrance, but the natives are also strongly impressed with the conviction that the disease is inoculable. Upon this point my cases cast no light.

In Madagascar there are a number of different races of all shades of colour, from the pure Negro to the Hovah, whose complexion is not darker than a native of Spain. These occupy widely varying climates. The central provinces, from their great elevation, have a temperate climate similar to that of the south of France. The climate of the plains, on the other hand, is tropical, and towards the north excessively warm. The circumstances and modes of life of these races are as varied as their origins and the nature of the localities in which they reside. Yet leprosy affects all alike. The Hovah, who lives in European fashion and in a temperate climate, is not less exempt from this scourge than the African slave. It is found amongst the Betsemasarahas who eat pork, and amongst the Betanmenas who abhor it. It occurs where fish is an article of food, but it is also to be seen where no fish is to be had, and where rice and vegetables satisfy the simple wants of the population; it exists in town and country; at the elevation of 7,000 feet above sea level, along the coast line, and through all intermediate elevations. Probably the dirty habits so prevalent in half civilized nations must tend to aggravate it; eating from a common dish with the fingers; the custom, very common in Madagascar, of interchanging garments, and of all lying huddled promiscuously together at night, cannot fail to render it more inveterate, even if they do nothing in the way of originating it.

A treatment directed to the improvement of the general health, with the use of tonics and occasionally of cholagogue purgatives if the liver is inactive, will be of service. Should the ulceration be troublesome, quassia (in large and frequently repeated doses) alone, or in suitable combinations, will promote the healing process. Iodide of potassium, given at intervals and in small doses, will promote the absorption of the effusion, care being taken to suspend it if the appetite fail or the health suffer. The tepid bath will always be useful in promoting the action of the skin and the comfort of the patient. Inunction with olive oil, thoroughly rubbed into the skin twice a day, after the patient comes out of the bath, is probably more serviceable than any single remedy. By the persevering use of these simple means, many of the patients experienced benefit, although none were entirely cured.

(*Edinburgh Medical Journal, July* 1864.)

HONG KONG.

DESPATCH from Acting Governor MERCER to the DUKE OF NEWCASTLE.

No. 57. Hong Kong,
MY LORD DUKE, 7th March 1863.

I HAD the honour to receive your Grace's Circular Despatch of 28th August last, and in obedience to the instructions contained therein I at once placed the queries on the subject of leprosy before the colonial surgeon, the principal medical officers of the army and navy, and eight other medical gentlemen resident in this colony.

2. Three only of these, Drs. Dickson, Schetelig, and Enscoe have been able to give me any information, and I enclose their remarks and replies to such of the interrogatories as they conceived themselves competent to answer.

3. Dr. Dickson was originally an assistant-surgeon in the army, and resided for some years in Canton as a private practitioner; his paper, though brief, will I think, be found useful.

4. Dr. Schetelig, I should mention to deprecate criticism of his style, is a German, and has taken some pains with his contribution, which he accompanies with a box (separate) containing models of diseased limbs and the photogram of a patient, attached to his report.

5. Dr. Enscoe is resident surgeon of the Seamen's Hospital.

6. I have caused the thanks of this government to be conveyed to these gentlemen for the assistance they have afforded.

7. Hearing that a Leper Hospital existed in the neighbouring colony of Macao (a description of which is given by Dr. Schetelig) I communicated with the Council of Government there, and enclose translation of their reply.

8. I also addressed the British Consular Agent at Macao, but his reply is merely a confirmation of the brief account of the institution given by the Council.

9. Some years ago Dr. Hobson, of the Medical Missionary Society at Canton, published certain remarks on this subject in a very useful but now defunct miscellany called the Chinese Repository. These I annex to the present despatch.

10. I transmit likewise a very singular passage, with which I recently chanced to meet in a book not long since published, Dr. Seeman's Mission to to Viti, or the Feejee Islands. It relates to the cure of leprosy by the smoke of the plant Sinugaga, and I thought it well to note it, lest it should possibly escape attention elsewhere.

11. I am not aware of any other sources from which I could obtain the information for which your Grace has called but I may suggest that Dr. Lockhart of the Medical Missionary Society is very likely to be able to make a valuable contribution to the stock of knowledge which may be collected, and he may be reached through Her Majesty's Minister at Peking, where Dr. Lockhart, as I am told, is at present resident.

I have, &c.
(Signed) W. S. Mercer.

His Grace
The Duke of Newcastle, K.G.
&c. &c. &c.

Extract from Dr. Seeman's Mission to Viti.
Pages 336–338.

Another tree, the contact with which is avoided by the Fijians, is the sinu gaga (*Excæcaria Agallocha*, Linn.), or poison sinu, called so in contradistinction to the sinu damu (*Leucosmia Burnettiana*, Bth.), and the sinu mataivi (*Wikstræmia Indica*, C. A. Meyer), both of which, like the sinu gaga, are littoral plants. The sinu gaga is found in mangrove swamps or on dry ground, just above high-water mark. It is 60 feet high, has a glossy foliage, oblong leaves, and minute green flowers arranged in catkins. It is difficult to exterminate, for unless the stumps are taken up, innumerable young shoots spring up the moment the main stem is felled. When the tree is wounded abundance of white milky juice flows, which causes a burning effect on coming in contact with the skin. Some natives, however, can handle this poisonous juice with perfect impunity . . . . . none, save those who have been sufferers from the effect of these poisons, can form any adequate conception of the agonies endured and the courage displayed by a Fijian who voluntarily submits himself to being cured of leprosy by the smoke of the sinu gaga wood. The Rev. W. Moore, of Rewa, was well acquainted with a young man of the name of Wiliami Lawaleou, who underwent the process of being smoked. Mr. Moore gave me the full particulars of this remarkable case when I was his guest in 1860, and he has also published a full account of it in "the Wesleyan Missionary Notices," Sydney, 1859, p. 157. After stating that he knew Wiliami as a fine healthy young fellow, Mr. Moore was surprised to find him one day so much altered by the effects of leprosy. Some time after he again met him full of health, and on inquiry learnt the treatment adopted to bring about this change. Taken to a small empty house, the leper is stripped of every article of clothing, his body rubbed all over with green leaves, and then buried in them. A small fire is then kindled, and a few pieces of the sinu gaga laid on it. As soon as the thick black smoke begins to ascend, the leper is bound hand and foot, a rope fastened to his heels, by means of which he is drawn up over the fire, so that his head is some fifteen inches from the ground, in the midst of the poisonous smoke. The door is then closed, and his friends retire a little distance, whilst the poor sufferer is left to cry and shout, and plead from the midst of the suffocating stream ; but he is often allowed to remain for hours, and finally faints away. When he is thought sufficiently smoked the fire is removed, the slime scraped from the body, and deep gashes cut into the skin until the blood flows freely. The leper is now taken down and laid on his mats to await the result. In some cases death, in many life and health. Wiliami had undergone this fearful process. He had taken some of the youths of the place, and on his way to the smoking-house told them his pitiable condition, his shame as an outcast, and his willingness to suffer anything to obtain a cure, and much would depend on their firmness. They were not to be moved by his groans and cries, and for the love they bore him he begged them to do the operation well, and threatened to punish them if they performed it only half. Imagine the scene ! They proceed to the lonely house. Wiliami's companions, as much afraid of overdoing as underdoing their sad task, leave the poor leper drawn up by his heels in the midst of a thick black smoke ; they retire to some distance, and presently are horrified by his piteous cries and groans. Some weep, some run home, others rush into the smoking-house ; but, with Spartan-like endurance, he commands them not to terminate his suffering until the process is complete. At last they take him down, he is faint and exhausted—the operation has been successful. Wiliami is no longer a leper, but again walks God's earth, a healthy man.

MACAO.

Letter from the President to the Acting Governor of Hong Kong.

Macao,
Most excellent Sir, 12th February 1863.

In the name of the Council of Government over which I preside, I have the honour to acknowledge the receipt of your Excellency's despatch of the 3d instant, applying for certain particulars relative to the Hospital for Lepers which you were informed existed in this city. I have to state that this establishment is not a hospital, but simply an asylum for lepers. The Holy House of Mercy has for many years received, according to its means, a limited number of these unfortunates, and admits into the same establishment any others the cost of whose maintenance may be defrayed by private charity.

In 1837 an attempt was made to enlarge its sphere of usefulness by subjecting the sick to regular treatment ; but the result was that the lepers not only refused to submit to medical treatment but also rejected the diet which it was considered absolutely necessary to establish ; and the Holy House of Mercy, fearing perhaps that the lepers would abandon the establishment, and thereby deprive the society of the opportunity of exercising its charity, decided on resuming the former system, which is followed to this day—the sick being housed in the asylum, and food and money supplied them, as also medicines when demanded.

There are now 34 inmates, 19 males and 15 females, in separate wards, all being Chinese, and all afflicted with the elephantiasis of the Greeks.

God preserve your Excellency.

JOÃO FERREIRA PINTO,
President of the Council of Government.

His Excellency W. T. Mercer, Esq.,
Acting Governor of Hong Kong.

NEW ZEALAND.

The disease among the New Zealanders, called by them "Ngerengere," and described by Dr. A. Thomson, surgeon of the 58th Regiment, under the appellation of "lepra gangrenosa," appears to be a form of true leprosy.* It commences with scaly patches on the extremities, extending over the trunk, and occasionally accompanied with cracks or fissures of the skin, and great local irritation. After a period of many months or years, the face, nose, lips, and eyebrows become swollen and shining, but without any tubercles; the eyelashes, beard, and whiskers fall out; the voice changes its tone; and the skin of the whole body, but especially of the face, becomes pale and livid, but there is at this time no loss of sensation. Subsequently, a small boil, blister, or dry crack appears along the flexure of the last joint of some of the fingers or toes; ulceration eats down, and eventually the phalanx drops off, generally with little or no uneasiness. In course of time, another phalanx becomes separated in a similar way, and the process may be repeated until the whole of the toes or fingers are lost. This slow and gradual mortification sometimes involves the metacarpal and carpal, or the metatarsal and the tarsal bones. The general health may be but little affected, and the patients are usually cheerful and happy.

The disease appears generally after puberty, and under thirty. Five of the six cases seen by Dr. Thomson were in males; all the patients were highly scrofulous. The duration of the malady is said to be from one to five or eight years. Death usually results from bronchitis or diarrhœa.

It is not confined to any particular part of the country. "I have heard," says Dr. Thomson, "of cases "in the Middle Island, in the northern parts, in the "southern parts, in the interior, and at the sea-"coasts of the Northern Island; but most of the "cases I have seen or heard about, occurred among "the tribes living in the interior, near the lakes of "Taupo and Roturna." From all accounts the disease seems to have been more common twenty years ago than at present (1853). Travellers rarely see the sufferers unless they ask about them. Four patients have been seen at the Colonial Hospital at Auckland during the last four years (1849–53), two of whom died.

The Arabian elephantiasis is rare in New Zealand; it is not unfrequent in most of the tropical Polynesian islands in the Southern Ocean.

Dr. Thomson considers that the favouring causes of the "ngerengere" are probably the use of poor or bad food, neglect of personal cleanliness, and indolence of body and mind. "It is a disease indicative of a "low state of civilization." Many New Zealanders, during the six cold months, sleep, eat, and walk about in dirty, stinking, coarse mats, the pores of the skin glued up with dirt; the consequence is that cutaneous diseases are very numerous.

Captain Cook has recorded that the New Zealanders eat food which the natives of Van Diemen's Land rejected; indeed, they will eat almost anything. They have a custom of putting maize and potatoes into water, where they are allowed to remain until they become putrid. The smell which issues from the places where this process is carried on is worse than from any dunghill. In this state the mixture is boiled and eaten, and it is highly relished. The smell of the food, when cooked, is like human excrement, but its taste is not bad, being somewhat like cheese. A similar plan is adopted in preparing other kinds of food in New Zealand and among the Polynesian islands in the Southern Ocean. Every patient I have seen with "ngerengere" was very partial to the above food, and where the disease is most common the people are in the habit of using much of it.

The disease is regarded by the natives to be most frequently inflicted by the gods, through priests and witches, for a violation of the laws of Tupu, and other transgressions. Formerly, and even now, sufferers are tapued (tabooed ?); a house is built for them, and they are fed apart from healthy people; and it is still believed that the disease may be communicated by the touch. The sufferers are held in disgust.

Since the improvement in the condition of the New Zealanders by intercourse with Europeans, the disease is becoming rare; probably, in twenty years more, civilization and her handmaidens industry and cleanliness will have extended themselves to the tribes in the interior of the country, and the malady may become extinct.

[The above notice is taken from Dr. Thomson's paper on the Customs and Diseases of the New Zealanders, in the number of the British and Foreign Medico-Chirurgical Review for April 1854.]

* The natives have got two names for the disease,—'ngerengere' in the south, and 'tuwhenua' in the north part of the island.

NEW SOUTH WALES.

The Annual Reports of the Registrar-General for 1856 (the year in which the Act for the registration of births, marriages, and deaths passed the Legislature), 1857, 1858, 1859, 1860, and 1861 have been received.

The following table shows the deaths registered in the colony during each quarter of the years 1857 to 1861 inclusive:—

		Estimated Population at the middle of each Year.	31 March.	30 June.	30 September.	31 December.	Total.	Ratio per 1,000.
Sydney	1857	54,100	343	275	291	408	1,317	24·34
	1858	54,695	543	401	299	494	1,647	30·11
	1859	55,298	394	320	281	411	1,406	25·43
	1860	55,910	593	573	522	338	1,826	32·66
	1861	56,532	300	312	265	372	1,249	22·09
		—	1,883	1,881	1,658	2,023	7,445	—
Suburban	1857	30,180	197	130	120	179	626	20·74
	1858	31,790	212	181	157	225	775	24·42
	1859	33,510	199	159	110	223	691	20·62
	1860	35,345	208	228	264	198	898	25·41
	1861	37,300	159	152	109	176	596	15·98
		—	975	850	760	1,001	3,586	—
Country Districts	1857	205,720	908	642	667	686	2,903	14·11
	1858	223,305	896	762	900	903	3,461	15·50
	1859	242,052	1,053	848	774	870	3,545	14·65
	1860	239,585	942	1,030	935	931	3,838	16·02
	1861	259,500	880	913	832	873	3,498	13·48
		—	4,679	4,195	4,108	4,263	17,245	—
					SUMMARY.			
New South Wales	1857	290,000	1,448	1,047	1,078	1,273	4846	16·71
	1858	309,790	1,561	1,344	1,356	1,622	5,883	18·99
	1859	330,860	1,646	1,327	1,165	1,504	5,642	17·05
	1860	330,840	1,543	1,831	1,721	1,467	6,562	19·83
	1861	353,332	1,339	1,377	1,206	1,421	5,343	15·12
		—	7,537	6,926	6,526	7,287	28,276	—

The year 1860 was marked by the ravages of a very severe influenza epidemic followed by measles, which proved fatal to a large number of children.

The classification of diseases used is the original one adopted by the Registrar-General of England. On this subject, it is remarked in the report for 1860—"Since this classification was adopted, Dr. Farr has "elaborated the English tables, and produced seven-

" teen divisions instead of twelve, but it does not " seem desirable to introduce a more elaborate classifi- " cation in these colonies, where the primary causes " of deaths are, in many instances, unknown, and " where the immediate cause of death is often recorded " without the guarantee of a medical certificate."

Besides the annual registration returns, the annual reports of the Health Officer of Port Jackson,—communicating particulars respecting the number of vessels arriving in the port, their sanitary condition, the state of health of the crews and passengers during the voyage and on arrival, the necessity or otherwise of detention in quarantine, &c.—for 1856 to 1860, have been received; also, the annual reports of the medical adviser to the Government on vaccination, from 1856 to 1861.

VICTORIA.

The Annual Report of the Registrar-General on the Vital Statistics of the Colony for 1861 gives the following return of the mean population of males and females living in Victoria during the year (1861), the number of deaths of either sex, and the number of deaths to every thousand living :—

Sexes.	Mean Population.	No. of Deaths.	No. of Deaths per 1,000 of Population.
Males -	325,530	6,124	18·81
Females -	215,495	4,398	20·41
Total -	541,025	10,522	19·45

The following table shows the number of deaths among persons of both sexes, under and over five years of age, registered in Victoria during each month of the year 1861 :—

Month.	Under 5 Years.	Over 5 Years.	Total.
January - -	789	396	1,185
February - -	619	345	964
March - -	706	457	1,163
April - -	652	419	1,071
May - -	505	400	905
June - - -	424	392	816
July - -	386	403	789
August - -	360	406	766
September - -	320	370	690
October - - -	356	357	713
November - -	335	290	625
December - -	491	344	835
Total -	5,943	4,579	10,522
Monthly average -	495·25	381·58	876·83
Daily average -	16·28	12·54	28·82

Along with the annual report for 1861, the monthly reports of the Registrar-General on the Vital Statistics of Melbourne and suburbs during 1862, and for January and February of 1863, have been received. In the report for January 1862, it is stated :—" It " will be observed that in this report the diseases are " classified upon a different system from that hitherto " adopted. This change has been made in order to " assimilate the classification with that recently " accepted in England, so as to enable comparisons to " be readily made between the returns published " in Victoria and those which emanate from the " Registrar-General of England."

TASMANIA.

At the last Census enumeration of this island, 7th April 1861, the population was 89,977, which I have embodied from the Census tables in the subjoined condensed form :—

	Males.	Females.	Total.	
Under 1 year of age	1,612	1,505	3,117	
Above 1 to 5 -	6,027	5,855	11,882	
,, 5 to 10 -	5,545	5,563	11,108	
,, 10 to 15 -	4,182	4,058	8,240	41,649
Total under 15	17,366	16,981	34,347	
,, 15 to 20 -	3,384	3,918	7,302	
,, 20 to 30 -	5,965	7,157	13,122	
,, 30 to 40 -	7,976	5,644	13,620	
,, 40 to 50 -	7,322	3,769	11,091	44,162
,, 50 to 60 -	4,504	1,825	6,329	
,, 60 to 70 -	2,270	822	3,092	
,, 70 to 80 -	631	226	857	
,, 80 to 90 -	154	39	193	4,166
,, 90 to 100 and above -	21	3	24	
	49,593	40,384	89,977	89,977
Married -	15,893	15,616	31,509	
Single - -	33,700	24,768	58,468	

At the 7th April 1863, the estimated population was about 91,000, and from the emigration of male adults to the gold diggings in the adjoining colonies, the adult males would be less than at the Census ; while adult females would be unchanged, children much increased, and both sexes above 60 somewhat greater. In reference to the queries respecting leprosy, it is necessary to remark, that the population of Tasmania is almost exclusively of British origin. Chinese, or other northern Asiatics, Polynesians, negroes, are scarcely known in *this* colony. The aboriginal Tasmanians are dwindled down to two males and six females.

Since September 1838, there has been a general and uniform registration of births and deaths, including the " causes of death." I am familiar with these returns since the commencement. For the last eight years I have every month drawn up " health-reports " from them, though I have no official connection with the department of registration. A death from leprosy has never been recorded since the registration was initiated. The climate of Tasmania is eminently salubrious. The rate of mortality for the whole population of the island in 1862 was somewhat less than that of Glendale in Northumberland, but the purely rural rate was only 10 per 1,000. An equally favourable rate exists so far for 1863. It is becoming daily more evident, that as the convict element is annually forming a smaller proportion to the rest of the population, and as the native-born are so rapidly preponderating over all other elements, that the death-rate is fast reducing, notwithstanding the younger character of the general population. This climate is peculiarly propitious to infant life.

E. Swarbreck Hall.

Hobartown, 21 Sept. 1863.

CEYLON.

Extract from Report of the Civil Medical Department for the Year 1862.

Leper Hospital.

The Leper Hospital is beautifully situate at Hendelle near the mouth of the river Kalany, in the centre of a large compound filled with cocoa-nut and other fruit-bearing trees.

Its primary object is the reception of pauper lepers, but by the return it will appear that other cases of sickness are admitted into it—these are a few chronic cases from the Government Civil Hospitals of Colombo which, it is considered may be benefited by the salubrious air at Hendelle, chronic ulcers and rheumatic affections being the principal of these. It is thus used as a sanatorium, and as the accommodation is more than sufficient for the lepers, who have an entire wing of the building to themselves, it affords an important and invaluable assistance in the treatment of chronic and debilitated cases which would either sink in the general hospital, or their cure would be retarded, and their cost to government consequently increased.

The lepers appear in the column of skin diseases: 67 were treated in 1862, of whom 11 died, or 164·1 per 1000.

The number treated from the Government Civil Hospital was 57, of whom 11 died, or 19·3 per 1000. Both these death-rates are high, but it should be considered, in regard to the lepers, that the disease is frequently rapid in its course, and has a tendency to shorten life, and in regard to the other cases, that they are affected with chronic disease and are in a state of great debility when first admitted.

The lepers have indulgences which are not allowed to the inmates of other hospitals; they have a daily allowance of betel, are provided entirely by the government with clothes, and annually a dollar is presented to each as a gratuity from the government, with a good strong pocket handkerchief. From the nature of their complaint and with their sense of being outcasts from society and shunned by their own friends, their feelings become morbid. They are dissatisfied and prone to complain; and although they are allowed to collect around them little articles of property, books, and other sources of amusement, the time passes heavily with them, and they contract habits of idleness. All who choose are permitted to cultivate small patches of ground within the large hospital compound, but many are maimed by their complaint and unable to handle a spade or a hoe, while others are too lazy.

This querulousness, encouraged by the want of occupation, often breaks out into open mutiny, when they are led on by one or two more turbulent than the rest. Small things are made the subject of loud complaint, and threats next follow. On one occasion they absolutely refused to receive the annual gift of the pocket handkerchief, because it was not of sufficiently fine texture to please them. Their food is frequently made a source of complaint, but in this respect Mr. Gill, the Medical Officer, has indulged them beyond a reasonable limit, and numbers are allowed to have their meals cooked in a chetty separate from the rest. I append for the information of government the diet tables in use in all the Colombo hospitals, by which it will be seen that their food is ample.

The costs of this establishment amounted to 795*l.* 17*s.* 6*d.*, or at the rate of 6*l.* 8*s.* 4¼*d.* per head. This high rate, as in the Lunatic Asylum, is dependent on the permanent nature of the cases.

Despatch from Major-General O'Brien to Mr. Secretary Cardwell.

Queen's House, Colombo,
Sir, November 14, 1864.

In accordance with the instructions contained in the Duke of Newcastle's Circular Despatch of the 28th of August 1862, the interrogatories on the subject of leprosy therewith transmitted were forwarded to the principal medical officers in this colony, and to other medical men of ability and experience, with a request that they would furnish every information in their power in answer to them.

2. Dr. Dane, the principal military medical officer, has stated that as cases of leprosy have not been observed among the soldiers serving in this command, he is unable to furnish the information required, and Dr. Willisford, the superintendent of vaccination, reports that as his practice is confined to the European inhabitants of Colombo and to the upper classes of natives, who are generally free from a leprous taint, he has had no opportunity of watching its progress. Dr. Thwaites, a private practitioner of long experience in Ceylon, declines to give any information.

3. I have also received from the acting principal civil medical officer the accompanying copies of replies furnished by certain officers of the civil medical department, which afford all the information which it is at present in the power of this Government to give in answer to the interrogatories prepared by the Royal College of Physicians.

4. I have received your Despatch, No. 98, of the 8th June last, expressing your regret at the omission on the part of the officers of this Government to supply the information sought for by the Royal College of Physicians. I communicated the substance of your Despatch to the acting principal civil medical officer, and received in reply on the 5th instant the papers which I now do myself the honour to transmit to you. I have, &c.

(Signed) Terence O'Brien,
Major-General.

The Right Hon. E. Cardwell, M.P.,
&c. &c. &c.

BOMBAY.

The Grant Medical College,
My dear Sir, January 15, 1863.

Along with this letter I send the loose sheets of an article on "Leprosy," as it appears in India, forming part of the 8th vol., new series, of the Transactions of the Medical and Physical Society of Bombay, now passing through the press under my editing as secretary of the Society.

You will readily understand why I am anxious that the results of my inquiries into this interesting, but almost ignored, subject should come thus early before your notice, in connection, that is, with the inquiry just set afoot by the English Government; and I am the more desirous that they should be known, because they are both new and of much physiological interest.

I believe I am the first to describe the minute structural changes which take place in the nerves: MM. Danielssen and Boeck, in Norway, apparently not having made use of the microscope for this object.

Nor has the eruption in leprosy, to my knowledge, received separate notice until now; in looking through my paper, it will be seen that I find reason for identifying this eruption (which is not to be confounded with the well-known tubercles) with some form of Lepra (Græcorum) so called; this is a new view.

It will also be noticed, how different my results (negatively so) are as regards the great nervous centres, when compared with those of the Norwegian authors.

I have given a tolerably complete account of the morbid anatomy of the disease, and a full list of the nerves affected, based entirely upon actual dissections; there can, indeed, be few places in India equally favourable to pathological inquiry into this subject as Bombay and its Native Hospital. The work, though arduous, was not without its interest, and I feel the more pleasure in offering you, first, its results, because of the permanent (slight though it be) mutual interest that exists between teacher and pupil in London, a sentiment not deficient in any way at St. George's.

Believe me, my dear Sir,
Yours very truly,
H. V. Carter,
Assistant-Surgeon, H.M. Bombay Army, and Teacher to the Medical College, Bombay.

To Dr. H. Pitman,
&c. &c. &c.,
Royal College of Physicians, London.

MADRAS.

The following communication, dated 21st January 1863, is from Thomas Hogg, Esq., who was 35 years in the medical service of the late Honourable East India Company, and is now resident at Mervale Five Dock, near Sydney, New South Wales.

EXTRACT from the Medical Report of the Chinda-drapellah Dispensary at Madras, for the Half-year ending 30th June 1850.

Leprosy and Elephantiasis.—These diseases prevail to a great extent in Madras. In some cases the former disease makes rapid progress. The following table shows the caste and sex of the persons that applied for relief during the years 1848, 1849, and first half-year of 1850.

——	Lepra.							
	1848.		1849.		½ of 1850.		Total.	
	M.	F.	M.	F.	M.	F.	M.	F.
Mahomedans	4	—	10	18	4	8	18	26
Malabars -	1	—	8	5	3	1	12	6
Gentoos -	—	—	2	1	4	3	6	4
Brahmins -	—	—	1	—	2	—	3	—
Rajpoots -	—	—	—	—	—	—	—	—
Mahrattahs -	—	—	—	—	—	—	—	—
Europeans -	—	—	2	—	1	—	3	—
Indo-Britons	—	—	—	—	1	—	1	—
Pariahs -	1	1	—	3	—	2	1	6
Total -	6	1	23	27	15	14	44	43

——	Elephantiasis.							
	1848.		1849.		½ of 1850.		Total.	
	M.	F.	M.	F.	M.	F.	M.	F.
Mahomedans	5	10	13	32	7	10	25	52
Malabars -	5	—	5	8	—	2	10	10
Gentoos -	—	2	5	8	—	3	5	13
Brahmins -	1	—	—	—	2	—	3	—
Rajpoots -	—	1	—	—	1	—	1	1
Mahrattahs -	—	—	—	1	—	—	—	1
Europeans -	—	—	—	—	—	—	—	—
Indo-Britons -	—	—	—	—	—	—	—	—
Pariahs -	—	1	2	—	—	3	2	4
Total -	11	14	25	49	10	18	46	81

I have observed, in almost every instance, the great want of perseverance on the part of lepers to continue a course of medicine for the length of time required to make an impression on the disease. As soon as they are in the least relieved, they cease to attend, or they become impatient at the imperceptible or slow progress they make to recovery, lose confidence in the treatment, and, perhaps, for other reasons also, discontinue their attendance. The bright white leprosy of Leviticus, ch. xiii., in some cases affects the palm of the hands; in others, it is seen in patches on various parts of the body; the hair becomes changed to white or grey, on the diseased parts. Very frequently these patches are seen on the genitals (the glans penis), at the back of the head, on the under part of the female breast, &c. The disease in this form prevails in Madras to a greater extent than, I think, is generally known or credited. Hence the necessity of examining domestic servants. A few cases of the more loathsome species with ulcers on the feet and toes, with exfoliation of the metatarsal bones, came under treatment. Several cases of nigrescent or "Black Leprosy" came to the dispensary; this species of the disease is more amenable to medicine than any other. Donavan's mixture from five to ten min.: with decoction of sarsaparilla was administered three times a day in all cases. The compound iodine ointment was rubbed in daily into the affected parts, and to prevent the patches spreading the margin was from time to time freely rubbed with a stick of the nitrate of silver. In the cases of leprous ulcers, nitric acid was substituted for the above mixture. The first symptom of improvement was a cessation of the internal burning heat; and in the cases of cutaneous eruption, this gradually disappeared. In several cases where the treatment was discontinued, the disease after the lapse of some months was observed to have rapidly increased.

Elephantiasis.—Two species of this disease came under treatment. First, the tubercular elephantiasis, or the enlarged thickened rugged leg and foot, from the knee downwards; the skin was generally insensible, and of a dusky or darker hue than other parts of the body. This species often affected the scrotum, of which several cases applied for relief. The other form was the thickened leg or arm with smooth surface. In both varieties, the patient had periodical attacks of inflammation of the affected limb, and fever. I have seen one case of metastasis from the arm to the penis, and *vice versâ*. The treatment in both varieties was nearly the same; while the former derived little or no benefit from it, the latter when steadily persevered in for a considerable time was certainly much improved. The medicines consisted of the iodide of potash, with the compound decoction of sarsa internally, and daily friction with the compound iodine, or creosote, ointment and the use of a flannel roller.

CALCUTTA.

During ten years that I was surgeon to the Native Hospital of Calcutta, leprosy in all its forms, and in every stage of its progress, came daily under our observation amongst the out-patients of that institution, and whose numbers averaged 100,000 per annum. It was soon observed that applicants of both sexes, who had sweating of the hands or the feet, or of both, had frequently dead white patches, or glistening, dusky, olive stains, on their bodies, or extremities; and further, that the children in arms often had such patches when either of the parents were affected with sweating of the feet and hands.

These facts I made known to my European friends, with a view to suggesting caution in the choice of domestic servants; and every day some of the Native Hospital dressers were employed by families in the examinations of such persons prior to their being admitted into service. The directions given to the dressers were,—to inquire and examine carefully into the condition of the general health, the family history, and the previous personal health-history of each individual; making a minute examination of both hands and feet; rejecting all who had any appearance such as that of sweating.

In making a choice of native wet-nurses, and of native children from whom to vaccinate those of English families, still greater care was used; the hospital dressers being here aided in their investigations by experienced native sick-nurses.

We soon became aware that, in a large city like Calcutta, a course of procedure such as is here mentioned had become one of expediency at least, if not one of necessity, if the bare possibility of contagion was to be guarded against.

With such ample materials as you possess, in the form of able reports from all parts of India, it is unnecessary that I should offer you any notices upon the nature of this formidable and loathsome disease.

J. RANALD MARTIN.

37, Upper Brook Street,
March 5, 1866.

The dangers to Europeans arise chiefly from vaccination, and from wet-nursing.

I felt that very early in my career in India, and I took the precautions which are here recorded.

I saw an English lady last year in a horrible condition, (she said) from having been vaccinated from a leprous native child.

J. R. M.

SKETCH of the Geographical Distribution of Leprosy at the present Time. By GAVIN MILROY, M.D., F.R.C.P., and Honorary Secretary of the Leprosy Committee of the College.

The great bulk of the following statements is derived from the "Handbuch der Historisch-geographischen Pathologie" of Dr. August Hirsch, of Berlin, 1860,—a work of the highest merit and usefulness.

The chief seats of leprosy in recent times continue to be the same regions of Africa and Asia where it was originally seen, and where it is known to have been most common in remote ages. It is still endemic in Egypt along the valley of the Nile, and on the shores of the Mediterranean and Red Sea. Aubert Roche and other recent visitants of the country confirm the statements of Bruce and Larrey at the end of last century. In Abyssinia it is said to be frequent, not only in the plains, but also in the mountainous plateaus. Mungo Park, as well as the earlier traveller Moore,* found it among the inhabitants of Darfur in the interior; and Daniell states,† that the slaves brought from Soudan to the west coast of the continent are frequently affected with the disease. It is common along the whole of the north coast of Africa. That it is frequent in many parts of Algeria, appears from many recent notices in French periodicals. Morocco and Senegambia have long been known to be infested with it, and there seems to be scarcely a district along the west coast which is entirely exempt.‡ At the Cape of Good Hope, it is common among all the native races and tribes; the inhabitants of the great sandy plains are more subject to it than those of the fruitful and cultivated districts. Whether the disease is prevalent along the east coast of Africa, we cannot say from want of evidence; but that it exists as an endemic in Madagascar, and in Mauritius and Isle of Bourbon, is perfectly well known.

The Asiatic continent appears to be nearly, if not quite, as much infested with leprosy as the African. In Syria, especially in the southern districts about Beyrout, Jaffa, and other places in Palestine,§ it is still common; and even some of the lofty districts of the Lebanon are far from being free. In Arabia, too, it continues to be endemic;‖ and the same may be said of various parts of Persia, where the poor sufferers are compelled to herd together in miserable hovels at some distance from the towns, and are generally left in the greatest wretchedness.¶ Burnes and other travellers mention the frequency of the disease in Bokara; it is known there under the name of "mukkow" and "kolee." It is common also in Ladakh, Cashmere, &c. In India, one of the most ancient seats of the malady, it is still widely and extensively prevalent. The sea-coast districts, it is generally believed, are more afflicted with it than the inland. In many parts, however, in the interior of the country it is very common, as at Patna, Tirhoot, Ramgur, and various places in the north-western provinces. Some estimate of the prevalence of the disease may be formed from the statements of Dr. Morehead that in two years, 1851 and 1852, there were received into the Leper Hospital at Madras 212 patients, and that 391 were admitted into the Bombay hospital from 1848 to 1853.** The statement, made by some persons, that the disease, which attracted considerable notice in several of the southern districts of the Madras Presidency, had been introduced by negroes from the coast of Africa into Tranquebar, is very questionable.

Leprosy is very frequent in Ceylon, and especially in the southern parts of the island. It is stated to be much more common along the sea coast than in the interior; in the hilly districts it is believed to be rarely met with. The disease is said to be rare in Burmah; the unhappy sufferers are treated as if they were criminals rather than as the victims of a cruel malady. From the official report of Drs. Ward and Grant on the Medical Statistics and Topography of Malacca, 1830, it appears that leprosy was so prevalent among the poor, that Government deemed it proper to establish a hospital for the reception of the sufferers. In Java, Sumatra, and other islands in the Indian Ocean,†† leprosy abounds; and some accounts state that it is by no means confined to the inhabitants of the sea coast. Several recent writers, as Lockhart, Hobson, Wilson, &c., have noticed the great prevalence of the disease in China, where lazar houses are as numerous and crowded in the present day as they used to be in England, and other countries of Europe, before the 15th century. Whether it extends to the northern provinces of the land, we are unable to say.‡‡ A Russian writer has recently stated that it is not uncommon in Kamschatka. In respect to all these remote countries, it deserves to be re-

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* Travels into the Inland Parts of Africa, 1738.

† Sketch of the Medical Topography of the Gulf of Guinea, 1842.

‡ Dr. Clark, in Vol. I., Transactions of the Epidemiological Society, 1864.

§ "Just outside the town (Ramley, between Jaffa and Jerusa-
" lem,) sat a group of dirty Arabs in rags. They rose from their
" stony seats, and advanced holding out little tin cups for alms.
" Their faces were so disfigured that they scarcely looked
" human; the eyelids and lips of some were quite destroyed,
" while the faces of others were swollen into frightful masses.
" Leprous families intermarry, and sometimes the immediate
" offspring are free from any appearance of the disease; but
" it is sure to revive in the succeeding generation. Some of
" them appear quite healthy till 19 or 20 years of age; but they
" feel themselves a doomed race, and live quite apart from the
" rest of the world, subsisting almost entirely on charity; for
" often their fingers rot off, and their hands are rendered use-
" less."—*Domestic Life in Palestine*, 1862.

‖ "The list of cutaneous disorders is long and loathsome,
" from *lupus exedens* to simple *impetigo*. Leprosy abounds;
" sometimes it assumes the blotchy and not dangerous form
" called 'baras'; sometimes it is the hideous 'djedûm,' under
" which the joints first swell, then break out into sluggish, yet
" corroding, ulcers, and at last drop off piecemeal. However
" disgusting, it does not render its victims legally impure (as
" was the case with the Jewish leprosy), nor does any one
" believe it to be contagious."—*Palgrave's Journey through Central and Eastern Arabia*, vol. 2, p. 3; 1865.

¶ Herodotus says:—"Should any citizen have a leprosy or
" white eruption he is not allowed to enter into the city, nor to
" have any intercourse with other Persians; and they say that
" he suffers because he has sinned against the sun. And should
" it be a foreigner who is attacked by one of these diseases, in
" many places they go so far as even to expel him from the
" country."—*British and Foreign Med. Chirurg. Review, for April* 1864, p. 382.

** Dr. Morehead in his valuable "Clinical Researches on Disease in India," 2nd edition, 1860, remarks:—"Leprosy is
" common in India. The numbers received into the Leper
" establishment at Calcutta are unknown to me; but I visited
" this institution in 1853, and found the accommodation and
" arrangements altogether inadequate for the comfort and well-
" being of those afflicted with this sad disease. * * *
" The system followed in the Madras Leper Hospital, at the time
" of my visit, under the judicious management of Dr. Hunter,
" formed a pleasing contrast to that of Calcutta. The patients
" were classified according to their previous habits and position
" in life. Books were provided for the educated, and gardening
" and other light occupations conducive to health and happiness
" were encouraged. The arrangements for lepers in Bombay,
" inferior to those at Madras, are superior to those at Calcutta.
" There is accommodation allotted for them in the Jamsetjee
" Jejeehboy Dhurmsala; and, under exacerbations of the disease,
" they are received into a ward of the Jamsetjee Jejeehboy
" Hospital appropriated for the purpose."

†† Sir John Bowring remarks, in his "Visit to the Philippine Islands," 1859, that "Elephantiasis, leprosy, and St. Anthony's
" fire are the scourges of the Indians, and the wilder races of
" the interior suffer from a variety of cutaneous complaints.
" The biri-biri is common and fatal. Venereal diseases are
" widely spread, but easily cured."

‡‡ Dr. Scherer, in the recent "Voyage of the Novara" round the world, states that "common as leprosy is in Southern
" China, it is unknown in the north; its area of manifestation
" seems to be confined within the tropics. Many Chinese in
" good circumstances when attacked have, it is said, removed to
" Pekin, where after two years' residence they lost all trace of
" the disease. It broke out anew, however, soon after their
" return to the south."—1863-4.

marked that it seems far from improbable that various secondary and tertiary forms of syphilitic disease may often be confounded with true leprosy.

It seems uncertain whether the malady has been recognized among the inhabitants of the Australian Continent, or of the Australasian Archipelago. The endemic disease among the New Zealanders, described by Dr. Thomson in 1854, appears to be of a leprous nature.

Although leprosy has been but little known in Europe generally since the latter part of the seventeenth century, it nevertheless continued to exist in certain localities in different regions throughout the following century; nor has it even yet disappeared from them as an endemic disease. The southern regions near to the frontiers of Asia are still considerably infested with it.* In many of the islands of the Ægean, both Turkish and Greek, it is far from being uncommon at the present time. In Crete it prevails to a very considerable extent, nor is it altogether unknown in the Ionian group (Hennen particularly mentions Cephalonia), and, according to Danielssen and Boeck, in Malta. In Greece, where the disease is regarded as a legal ground for divorce in married persons, the localities said to be most affected with it are certain districts of the Peloponnesus. Attica and Bœotia are not entirely free. In 1840, the number of lepers throughout the kingdom of Greece was stated, in an official document, to be 161; and in 1851 the number was set down at 350. This apparent increase of the disease was probably due to the inaccuracy of the earlier return.†

As to what extent it prevails throughout Turkey, no information exists. It has been asserted that it is unknown in Wallachia. On the other hand, it is notorious that the south-eastern provinces of European Russia are more or less extensively affected, along the whole of the vast region extending from the Crimea by the shores of the sea of Azof, and by the Caucasus, away to Astracan on the Caspian. It seems to have been endemic for centuries past among different tribes of the Cossacks. In various localities also in the Baltic provinces of the empire, as in Courland, Esthionia, and Finland, it is known to exist, and Meyer states that it is not confined to the population on the coast.

In Sweden, where the malady was far from being unfrequent at the close of last century and in the early years of the present one, it has according to the testimony of Drs. Huss and Berg, of recent years in a great measure disappeared. The localities where it was most common 70 years ago were the districts of Angermanland, Medelpad, Helsingland, Upland, and Bohuslan. Within the last 30 years, there were 29 inmates in the Leper Hospital at Hernosand, independently of other cases of the disease scattered over the district. Since then no fresh patients have applied for admission. In the district of Medelpad too, where the malady is believed to have been endemic for centuries, it has become very rare; and in Helsingland, which was formerly one of the chief seats of leprosy in Sweden, the cases are now only solitary and sporadic, where once they were numerous and common. The same may be said of the districts of Upland and Bohuslan. The disease has lingered longest along the coasts of Abyfiord; but there too it is much less frequent than formerly. In all these different districts, the localities chiefly affected seemed to have been the deep valleys and the shores of the fiords, which are liable to frequent inundations.

Norway has continued to be very much more infested with the malady than Sweden. It is still endemic there, under the name of Spedalskhed, along almost the entire coast from Stavanger in the south to Finmark in the north, between the 59th and 72nd parallels of latitude; and, within the last 12 or 15 years, it seems to have been extended somewhat more into the interior of the country in certain districts. In 1846, the number of persons known to the public authorities to be affected with leprosy throughout the country was 1,122; but the actual number was, doubtless, much greater, as very many cases of the disease in its early stages were, it was notorious, studiously concealed by the relatives of the sufferers, as well as by the patients themselves.‡

While the malady has, since the end of last century, disappeared from the Shetland and the Faroe Islands, it is still met with in Iceland, although to a much less extent than formerly. A century ago, the number of lepers there was set down at 280; in 1838 the number was estimated at 128; and ten years later, Schleisner, who officially visited the whole island, found only 66 persons affected with the disease. A good many, however, of the patients had been, it was believed, cut off by the epidemic of measles which had prevailed and was very fatal the year before, 1847.

In the south of Europe leprosy is still endemic, although to a very partial extent, in some points of the coast of North Italy and of the south-east of France. The only place on the east coast of Italy where it is known to exist is Comacchio, situated close to the notoriously unhealthy lagunes of Ferrara, and where the malady has been endemic for ages past. It is confined almost entirely to the town and its immediate neighbourhood, and happily it has of late years diminished in frequency, so that the total number of lepers now in Comacchio is believed not to exceed a dozen or so at most. Along the coast of the Gulf of Genoa, from Chiavari to the frontiers of France, it appears to be somewhat more common in certain spots, as at Chiari and Varazze in the district of Genoa, but specially in the province of Nice, as at Monaco, Pigna, Castelfranco, Turbie, &c. In the official report made in 1843, the number of leprous persons in the Sardinian states is stated not to exceed 100 in all; but, if this statement were then correct, the malady would seem to have become more frequent since; as in 1858 the Government found it necessary to convert a monastery at St. Remo into a lazar house, into which 40 patients from the surrounding district alone were at once admitted. The disease appears to be confined to the poor population of the coast. At some points of the French coast, too, along the shores of the Mediterranean, in Provence, Languedoc, and Roussillon, it is still met with. Formerly, it was extremely common there; and even down to the latter half of last century, it existed to a considerable extent in some districts. The Delta of the Rhone, especially about Martiguez§ and Vitrolles,

* Many of the cases of the disease seen in Constantinople are in persons from different places in Asia Minor, where the disease is probably much more frequent than on the European side of the Bosphorus.

† "In Greece leprosy is endemic; the statistics lately published by Dr. Dekigalla of Syros show to what extent it prevails. According to this author, the lepers are left in a sad condition, some living in solitary huts or caves, and others herded together in lazar houses of the most wretched description."—*London Medical Review*, 1861.

‡ Professor Daa, at the meeting of the International Statistical Congress held in London in 1860, said:—"The most remarkable affliction in my country is that particular disease, elephantiasis, which has spread all along the fishing districts, and in the damp localities along the coasts, and only there; it does not enter the mountainous parts of the country, nor in general does it penetrate to the interior. The number of persons afflicted with the disease in 1858 was 2,087."

Professor Daa added:—"Diseases of the mind are likewise more prevalent in Norway than in many other countries, and several reasons have been assigned for this deplorable fact. It is the same, I believe, both in the islands and the mountains, where the people live very simply, and with very little change of food." Hereditary transmission appears to play an important part in respect both of mental disorders and of elephantiasis among the Norwegian population.—*Report of the Proceedings, &c.*, p. 29; 1861.

Sir W. Wilde, in his valuable "Status of Disease" in connection with the Irish Census of 1861, enumerates leprosy among the various causes of the great frequency of blindness in Norway, where the proportion of the blind to the population is higher than in any other country in Europe.—p. 38.

§ There are two very interesting papers on the leprosy at Martiguez, on the coast of Provence and not far from Marseilles, in the Memoirs of the Royal Society of Medicine in France, for 1779 and 1787, by Dr. Vidal, a resident physician there. These papers were followed by "*Recherches sur état actuel de la Lèpre en Europe, &c.*," *par MM. Chansereu et Coquercau*, in Vol. V. of the same work.

also Berre, Rognes, and other places near Marseilles and Toulon, were the localities which were most affected, and where scattered cases have continued to be observed during the present century. Throughout last century, even down to its close, the disease was by no means uncommon also in Auvergne, about the district of the Mont d'Or, under the name of the "Mal S. Main." In the course of the present century, it seems to have entirely disappeared from this part of France, as it had previously done from other parts of the country, as for example from the coast of Brittany and Normandy, where it formerly prevailed to a considerable extent.*

Spain continues to be more infested with leprosy than most other European countries; but our information as to the extent of its prevalence in different parts is very scanty and imperfect. In the latter part of last century it was common in Andalusia, Asturias, Galicia, &c.; there were many lazar houses in these provinces at that time, occupied by numbers of inmates. It still exists to a considerable extent not only in these parts of the peninsula, but also in Grenada,† and in Catalonia. Dr. Grasset, writing in 1820, mentions particularly in the last-named province the towns of Reus, Rindoms, Vilaseca, and the mountainous district of Prades near Tarragona, as localities where many leprous cases were to be seen.

In Portugal, the chief seat of the disease in recent times has been the hilly district of Lafoes, in which the number of leprous persons was, about 30 years ago, variously estimated at 300 to as many thousands. It is still endemic also in the provinces of Lower Beira and the Algarve. There is a leper hospital in Lisbon. Forty or fifty years ago, the number of inmates was said to be about 40; since that time, the usual number appears to have been larger. When visited by Dr. Webster in 1861, it contained 69 patients, 49 males and 20 females.‡ The disease is known in Portugal, and in the Brazils, under the name of "Morfea" or of "Mal de San Lazaro."

With respect to the other countries of Europe hitherto not mentioned, viz., Great Britain, the Netherlands, Denmark, Germany, and Switzerland, cases of the disease have, during the present century, been of very rare occurrence among the native residents. Most of the examples that have been met with in England (and the remark applies, we believe, to Holland also,) have occurred in persons who either were natives of some of the tropical countries where the malady is still common, as in the West or East Indies, &c., or who had resided there for many years.

Before passing over from the old to the new world, it is to be noted that leprosy continues to exist in several of the islands off the western coast of Africa. It is still endemic in Madeira, although not now to the extent that it was at the end of last century. There is a leper hospital near Funchal. The number admitted between 1702 and 1803, according to Dr. Adams in his work on morbid poisons, was 890, of whom 526 were males and 373 females. In 1829, Dr. Kinnis found 17 males and 7 females in the establishment affected with tubercular or articular leprosy, in various degrees of severity. To what extent it exists in the Canary and Cape de Verde Islands has not been ascertained. Cases have been met with in St. Helena, and the disease is still seen in the Azores.

In the new world, the countries which appear to be chiefly affected are Mexico and other parts of Central America, Brazil, and several of the West India Islands. In Mexico it has been long known; it occurs chiefly among the Indian tribes, not only near the coast and in the low plains, but also in many elevated plateaus, a thousand feet and more above the sea-level. It is common also in New Grenada, Venezuela, and Ecuador. Ulloa mentions its prevalence in and around Carthagena; and, in a memorial addressed to the first congress of the Republic of Colombia in 1823, the towns of Bogota, Tunja, Casanare, Socorro, Pampluna, &c., are enumerated as being infested with it. Throughout the whole extent of Guiana—Dutch, French, and British—it is common, and is often known there under the names of "mal-rouge," "coco-be," or "boasie." In 1786, a French royal commission reported on it as it prevailed in the colony of Cayenne, where it was popularly called "Le mal rouge." Forty years later, the number of inmates in the leper-house in the town of that name averaged 60; but this number was only a small proportion of the lepers in the province. It has been recently stated that the malady has decidedly increased, of late years, in Dutch Guiana or Surinam.

It is exceedingly prevalent in different parts of the Brazilian empire, and especially in the inland provinces of Matto Grosso and Minas Geraes, and in the maritime district, of S. Paolo. In some places, almost every family is said to be tainted with the "morfea." The Governor of S. Paolo, in his report for 1840, remarked:—"It is indeed a sad spectacle, on "the road from Rio de Janeiro to this town, to meet "such numbers of persons infected with the leprosy. "In the neighbourhood of every village in the "district we find a hut or shed which serves as a "refuge for these unfortunates, who are excluded "from all society." Notwithstanding the wide prevalence of the disease throughout the entire kingdom,§ there are only three leper hospitals in Brazil, viz., one at Rio de Janeiro, one at Bahia, and one at Pernambuco.

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* The introduction of the disease into New Brunswick has been attributed, as will have been seen from the documentary evidence in the Report, to emigrants from St. Malo during the present century.

† "The Leper Hospital at Grenada, founded by Queen Isabella, "contained (in 1859) 53 inmates, 39 males and 14 females. "Their ages varied from 14 to the grand climacteric. In a few "of the inmates, the only symptoms were small dark eruptions "on the skin; but in the majority there were tubercular elevations and excrescences on the face, forehead, nose, ears, and "frequently also on the neck, arms, and hands. In the advanced "cases, the features were much deformed by swelling and ulceration, the mouth and tongue were ulcerated, the voice was "low and husky, and occasionally one of the eyes was lost. "Several had lost fingers, toes, and even a hand; and in two "cases the whole body was one mass of corruption.

"Almost all the patients, it is stated, were inhabitants of the "sea coast in the south-eastern provinces of the country, "especially in Almeria, Adra, Motril, Malaga, Velez-Malaga, "or of Cadiz and its vicinity.

"Senor Mendez Alveiro recently stated to the Royal Academy "of Medicine at Madrid that, in 1851, there were ascertained "to be 284 lepers in nine provinces of Spain, without reckoning "many more about whom no statistical return had been obtained from the districts where they resided. It has been "asserted by some writers that the disease has increased since "the beginning of the present century. Of the above 284 "patients, 188 were males and 96 females. Their ages varied "from 15 years to 45; three fourths of the whole were persons "of middle age. 79 had been affected with the disease, at the "time they were officially enumerated, from one to five years, "and 122 from five to ten years. The remainder had been "afflicted for much longer periods.

"Both here (Grenada) and elsewhere it is confidently stated "that the ordinary attendants at leper houses rarely, if ever, "manifest any symptoms of the disease, notwithstanding they "have long resided in such establishments; and leprous patients "may remain at home for years, without infecting any other "member of their family."—*Dr. Webster in the Transactions "of the R. Med. Chirurg. Society*, vol. 43.

‡ Dr. Webster informs me that these inmates "were labouring "under various forms of leprosy, but none appeared examples "of pure Arabian elephantiasis; that variety being of rare "occurrence throughout this district of Europe."

§ Mr. Bates, in his recent work "The Naturalist on the Amazons, 1863," mentions the great frequency of leprosy in some parts in the interior, especially at Santarem, situated at the junction of the Tapajos with the Amazon, and which is known as the "cidade dos lazaros." Some of the best families in the place are tainted with the disease; it falls on all races alike, white, Indian, and negro, but he never heard of a well authenticated case in a European. The staple food of all classes in most parts of the Lower Amazon country is salted fish.

In the La Plata states, the disease is said to be little known, and only seen in the provinces of Parana and Uraguay in the interior. In the countries on the west side of South America, as in Chili and Peru, it seems to have been scarcely, if at all, observed, until quite recently. Cases have been met with of late years in the city of Quito.

With respect to the West Indies, the prevalence of leprosy seems to vary a good deal in different islands; for while the disease is common in Cuba, Jamaica, Barbadoes, Guadeloupe,* and St. Bartholomew, it is alleged to be of rare occurrence in Porto Rico, Martinique, and St. Lucie.

The only parts of North America, to the north of Mexico, where the disease has been met with are one one or two districts in the province of New Brunswick, Greenland, and the Aleutian Islands in the Sea of Kamschatka, between the continents of Asia and America.

Notes respecting the Leprosy of Scripture. By Gavin Milroy, M.D., &c.

The characters of the Mosaic leprosy, according to the confused and imperfect description given in Leviticus, ch. xiii., seem to consist in an eruption on the skin of raised or tuberculated, scabby or squamous,
2, 3, 4. or smooth shining spots or blotches ("a rising or swelling, a scab, or bright spot"), depressed in their centre, and with the hair on them being turned white.

19. 42. The colour of the spots is sometimes described as
mb. xii. 10. white, or reddish-white. Elsewhere we read of the
Kings v. 27. eruption being "white as snow."

Various sorts of skin disease were obviously very like to the eruption of the true leprosy, and not easily distinguished from it. The main diagnostic characters of the latter were the tendency of the eruption "to
7, 8. spread much abroad in the skin," and the spots being "in sight lower than the (surrounding) skin," and "the hair being turned white."

24. The commencement of the leprous eruption in an erythematous rash seems to be indicated.

The liability to suppuration of the tuberculated spots and to ulceration may be inferred from the
10. mention of "boils,"† and of "quick raw flesh in the
16, 17. rising or swelling"; and the cicatrisation of the sores is probably alluded to in the "raw flesh turning again and being changed into white."

There is no notice whatever of the destruction or falling off of the joints of the hands or feet in any cases.

No mention is made of anæsthesia or other symptom of nervous lesion, so notable a characteristic of true leprosy.‡

That leprosy was often the direct and immediate result of a Divine rebuke or judgment is distinctly affirmed. Beyond this, nothing can be gathered as to the exciting or predisponent causes of the disease. Numb. xii. 1 2 Kings v. 2 Chron. xx 19.

When its existence was suspected, the person was directed not to consult a physician, but to apply to a priest and submit to hisinjunctions; and he was required to abide by the decision of the priest.

An attack of the disease was unquestionably often temporary or of limited duration, and it was far from being always persistent or lifelong. In other cases, it was more chronic, and continued throughout life.

In the recovery of the afflicted, medicinal treatment seems to have had no part; as far as the use of ordinary remedies was concerned, the cure seems to have been "spontaneous."

The cure of Naaman by washing in the Jordan was clearly miraculous, and it seems to be implied that his malady could not be removed by merely human means.

The term "cleansing" is much more frequently used than that of "healing," when the recovery of lepers is spoken of; and "cleansing" was (at least in the Old Testament) rather an act of ceremonial purification, prior to re-admission to sacred ordinances and social intercourse, than an act of direct healing or cure. 2 Kings, v.

It does not seem that the disease was generally, or even frequently, hereditary. The judgment upon Gehazi, that it should "cleave unto his seed for ever," looks like a special and exceptional infliction in his case.

Individual instances of the malady in a family seem to have been of frequent, if not of usual, occurrence.

Neither is there any proof that it was considered to be contagious, or communicable from the patient to other persons by proximity or intercourse. The leper was excluded from society, and especially from participation in religious rites, because he was ceremonially "unclean"; but the like "uncleanness" was induced by other causes besides the leprosy.

It would seem that the priests might visit a leper, and even touch him, without contracting defilement.

Gehazi appears to have continued to wait upon Elisha notwithstanding the judgment that had been inflicted upon him; nor does it seem that Naaman was avoided by his family or his retinue. Uzziah, however, "dwelt in a several (separate) house, and "he was cut off from the house of the Lord," 2 Kings vii. 3. The condition of the poor lepers outside the gate of Samaria seems to have been altogether the same as existed many centuries later, in the time of our Saviour, and as it continues to exist in the present day.

As to the described signs of leprosy in garments, or in the walls of a house,—consisting, it would seem, mainly in patches or stains of greenish or reddish discoloration upon them,—and the manner in which the suspected or infected materials were to be dealt with, according to the decision of the priest, it is unnecessary to make any remark. We know of no appearances on inanimate objects that are in any way indicative of the existence of leprosy, or indeed of any particular malady. Foul and mildewed stains on clothing or on the walls of houses are, of course, evidences of impurity and unwholesomeness, and as such, they point to the necessity for sanitary purification. Beyond this, more cannot be said. Lev. xiii. 47– xiv. 34–48.

I am indebted to my friend Dr. Greenhill for the following note:—

"Of the Hebrew used for *leprosy* (tsara'ath), Lee, "in his lexicon, says, that the etymology is doubtful, "but the nearest word in the cognate dialects is the "Arabic name for *epilepsy*, 'quâ prosternitur "homo.'

"In the Septuagint the word used for leprosy is "λέπρα (certainly sometimes, probably always), which "is connected with λέπος, a husk or scale."

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* Dr. Adam Neale quotes, from the 50th vol. of the "Philos. Transactions," the Report of a Commission appointed by the French Government in 1748 to inquire into the prevalence of the disease in Guadeloupe, where it had first attracted notice about 25 or 30 years before. The Commissioners examined 256 suspected persons; of this number, 125 (22 whites, 6 mulattos, and 97 negroes) were affected with the developed disease. As many of the patients resided on elevated situations as in the low marshy plains. The prevalent belief was that the disease had been introduced into the island by negroes brought from Africa, with the disease already upon them when they arrived.

† Whether the "sore botch that cannot be healed, from the sole of thy foot unto the top of thy head," was of the nature of leprosy can, of course, only be conjectured.—*Deut.* xxviii. 35.

‡ Possibly, the withering or wasting of the flesh, and the paralysis or loss of power in the parts affected, in the cases of Miriam, Naaman, and Jeroboam (whose sin was similar to that of Uzziah, when he was smitten with leprosy,) may be allusions to this class of symptoms. The expressions referred to are these:—

"Let her not be as one dead, of whom the flesh is half consumed when he cometh out of his mother's womb."—*Numb.* xii. 12.

"Go, wash in Jordan seven times, and thy flesh shall come again to thee."—2 *Kings* v. 10.

"And his hand, which he put forth, dried up so that he could not pull it in again to him."—1 *Kings* xiii 4.

Answers to the Interrogatories on Leprosy by W. E. Nourse, F.R.C.S.

1. I have seen leprosy in *England*, in *Egypt*, and in *Norway*, and will answer as far as I know respecting each.

a. I am acquainted with two forms only of leprosy, the tubercular and the anæsthetic. In *Norway*, I saw instances of both forms; in *England*, the tubercular form only; in *Egypt*, both forms.

b. I consider these two forms only as varieties of one common morbid state or action, and not as distinct diseases. But the "Barbados-leg" I look upon as a totally distinct affection, having nothing to do with leprosy, though some have thought otherwise. A Hakim or Arab doctor at Assouan told me, on my inquiring for leprosy by its Arab name of *dsjuddam* or *judam*, that he was perfectly well acquainted with it, and every now and then saw a case. I also asked him if he were acquainted with the elephantiasis Arabum or Barbados-leg, calling it by its Arab name of *dal fil*. He said that he sometimes saw it, and he thought it quite distinct from the other. There appeared no reason to doubt this man's assertions. Assouan, the ancient Syene, is of importance as a place of call on the journey between Egypt and Abyssinia, and, among the various races of people passing up and down and residing there, he would be likely to observe many forms of disease.

c. In the anæsthetic form of leprosy, of which I have seen but few cases, the characters noticed were paralysis associated with various blotches on the skin and a clubbed appearance of the hand where the fingers had been destroyed by necrosis. In the tubercular leprosy, which seems to me to be the more common form, the characters noticed were soft purplish blotches on the face, deposit of tubercles along the eyebrows, giving a sort of fierce and lion-like aspect (the leontiasis of the older writers), thickening of the lips, tubercular swellings in a state of ulceration with a very evil smell, and destruction of the sight by tubercular deposits on the cornea.

2. I am not acquainted with any facts showing the commencement of leprosy to be limited to any particular age. In three cases only did I see the beginning of the disease. One was a patient ætat. about 44, who had repeated attacks of erythema of the cheeks, lips, and chin, leaving irregular thickening. Another was a patient of about 50, who had chronic tubercles deposited upon the forehead and neck. The third was about 60, and had soft purplish blotches over the face.

6. Leprosy appears to me to be confined to the lower order of people, and to be most frequent:

a. Near the sea.

b. In dirty, ill-ventilated, ill-drained houses.

c. Among people of personally dirty habits, and who are compelled by poverty to wear their clothes a long time; and

d. Among ill-fed people, who would not only get *insufficient* food, but who would also eat things rejected by others as being of *inferior quality*.

8. Leprosy is considered in Norway to be undoubtedly hereditary, and to be perpetuated and increased there by lepers marrying and having children.

9. I have no reason to believe that leprosy is connected with any other disease, except in the rare and curious recorded cases of its co-existence with scabies Norvegica, and except so far as we may think we trace the remains of it in lupus, cheloid, &c., in the present day.

10. I have met with no instance of leprosy communicated by contagion.

11. In the absence of any cure for leprosy, the the legislature of Norway had it in contemplation to enact a law for confining lepers in asylums, that the disease might not be perpetuated and increased, as was the case, by marriages; but in the session of Storthing for 1851 the proposition was rejected.

12. In Norway there are at Bergen separate hospitals into which lepers are admitted. These hospitals form one stitution only, but are erected as distinct buildings for convenience, being made of wood. The old building in 1850 was dark, close, and ill-ventilated; and being used for the severer and incurable cases, in which there is often extensive foul ulceration, had a bad smell. The new building was clean, light, airy, and spacious. Here were placed the cases in which there was a chance of cure. In the session of Storthing for 1851, 30,000 dollars were voted towards the erection of another building to the hospital, any further expense to be defrayed by the neighbouring counties.

15. With respect to spontaneous cure of leprosy, I saw at Bergen two formerly bad cases in which a spontaneous cure had taken place. One of them, an elderly woman, is figured in the Atlas of Drs. Danielssen and Boeck. Both patients were seamed with cicatrices where former ulceration had gone on.

Brighton, December 16, 1862.

Observations on the true Leprosy or Elephantiasis, with Cases, by Erasmus Wilson, F.R.S.

The term elephantiasis is applied by the ancient writers to two diseases, distinct in their nature and without analogy with each other, the one being a constitutional, the other a local, affection; hence the terms elephantiasis Græcorum and elephantiasis Arabum, in other words, elephantiasis as understood by the Greeks and elephantiasis as understood by the Arabs. It is the former of these which is recognized at the present day as the true elephantiasis or leprosy, and which forms the subject of the present enquiry.

About 20 cases of elephantiasis have come under my observation, of which I have preserved the notes of 19. Eighteen of this number occurred in the persons of Europeans, and one in a native of Hindostan. The sources from which the cases were derived are the East Indies, including the islands of Ceylon and Mauritius, which together number 16, and three from the West Indies. Their particular source was as follows:—

Hindostan	10
Ceylon	1
Mauritius	5
West Indies	3

In reference to sex, 16 were males and three females; the age of origin ranging between 7 years and 67, and the duration of the disease being 10 years.

These cases illustrate very fairly the three periods of the disease, namely, its *latent* period, its *febrile* period, and its *persistent* period; together with its chief varieties of manifestation, namely, neurotic or anæsthetic, cutaneous or tubercular, and mixed tubercular and anæsthetic. Case 11 draws the attention to a remarkable resemblance between elephantiasis and syphilis, and suggests a comparison with the latter disease. And several of the cases raise the question of the possibility of contagion by inoculation or by lactation.

It is evident that long residence in countries in which the disease is endemic predisposes to its attack, while birth in an infected country takes the place of long residence. The disease is not contagious in the ordinary intercourse of life, and possibly also in the more intimate intercourse which takes place among married persons. On the other hand it is clearly *hereditary*, and manifests all the variety which belongs to hereditity; one child only of an infected parent out of a family of several children may be attacked, or the transmission may be collateral, or one generation may be passed over and the succeeding generation be the sufferer. In one of the cases the disease was developed after vaccination, but vaccination may have been only the exciting cause. In another the disease followed syphilis, and was thought to be secondary syphilis; but time discovered its true nature, and further enquiry determined that

the source of the syphilitic poison was a leprous woman. And in this case it may be asked, Did the leprous taint creep into the blood with the syphilitic poison, or did the syphilitic disease merely act the part of an exciting cause to the leprous diathesis already engendered by birth and residence in an infected country? This question important in itself, becomes doubly so in relation to lactation; many European mothers in Hindostan are too feeble to suckle their own infants and the latter are consequently entrusted to native nurses. In India there is a religious abhorence of leprosy; the existence of a leper would be quickly discovered, and, being discovered, the person would be shunned. But the cases before us show that leprosy may exist in the system in a latent form for months, and probably for years, without declaring its presence; and, therefore, with all the care that could be taken, a nurse might be selected for the infant, and in that nurse's system, unknown to herself or to others, the seeds of the disease might be lurking and might be conveyed to the foster child.

Elephantiasis corresponds with the exanthemata and with constitutional syphilis in having its period of latency and its period of activity. But the period of latency of rubeola, scarlatina, and variola is only of a few days' duration, the period of latency of syphilis, a few weeks; while the period of latency of leprosy is many months, possibly years. Even the exanthema of elephantiasis may be developed in the skin by so insidious a process as to remain undiscovered until it had been in existence for many months. Sooner or later, however, the fever of leprosy declares the exanthematous relations of the disease; after several days of constitutional febrile excitement, an erythematous exanthem is thrown out upon the skin, and this operation being effected, the febrile excitement suddenly subsides. But here a contrast becomes apparent between the ordinary exanthemata and elephantiasis, and we can find a parallel only in syphilis. Rubeola, scarlatina, and variola having entered upon the exanthematous period, run a specific course and cease, never to return from the same infection. But after the exanthematic period of syphilis has subsided, it may return from time to time intermittingly and at irregular intervals for a number of years. So also is it with elephantiasis; after the first exanthematous attack has subsided, an interval follows of more or less complete rest; and then the febrile period returns and runs the same course as before; and a similar succession, of febrile excitement, of exanthematic exacerbation and subsequent rest constitutes the course of the disease and continues in an intermittent form for the rest of the patient's life.

Another parallel with the exanthemata is evinced in the irregularity of the stages of elephantiasis; just as we may have rubeola and scarlatina and syphiloderma, *sine febre*, so we may equally have elephantiasis passing imperceptibly from its latent to its persistent stage without any trace of febrile excitement being discoverable. On the other hand, the febrile attack is sometimes remarkable for its severity, and may assume an intermittent character, each febrile paroxysm being followed and relieved by an exanthem or by a neurotic congestion.

The cases also serve to illustrate the independence of elephantiasis and syphilis; in one, syphilis preceded elephantiasis, and was cured before the symptoms of the latter affection attracted attention. In another, the patient became the subject of syphilis after the elephantiasis had been in existence for some years. Nevertheless, elephantiasis approaches more nearly to syphilis in its phenomena than to any other disease with which we are acquainted. In both there is the long period of latency; in both the exanthematic fever, the eruption on the skin, the affection of the mucous membrane, the neurotic symptoms, the ulceration of the soft tissues, and the affection of the bones. In both there are the lengthened intermissions, and the recurrence of the same series of symptoms during the entire lifetime of the sufferer. In both also there is a destructive metamorphosis, more or less complete, of the tissues which are attacked. But there are differences also as well as resemblances; syphilis tends in its processes to spontaneous cure; elephantiasis has heretofore been deemed incurable. The intermissions of syphilis are periods of complete suspension of morbid action. The intermissions of elephantiasis are simply a diminution of the severity of the symptoms; a temporary retirement of the disease, to be followed possibly by a powerful reaction. In admitting therefore an analogy between elephantiasis and syphilis, we should be unwilling to recognize an identity, however remote. The analogy is simply that which belongs to the exanthemata in general; and we possess a sufficient insight into the morbid phenomena of elephantiasis to be enabled to assign to it a place, not far removed from the more common exanthemata, but separated from them by the interposition of syphilis.

In referring to the analogies of elephantiasis and syphilis, we allude to the constitutional affection of the latter, embracing the two periods known as the secondary and the tertiary. The mode of transmission of the primary affection bears no resemblance to that which obtains in elephantiasis; but recent researches have placed beyond a doubt that syphilis in its secondary stage, and not improbably in its tertiary stage, is transmissible; and it is with these periods alone that elephantiasis admits of being compared. If ever there existed a period in elephantiasis corresponding with the primary period of syphilis, the symptoms of such a period have long since been lost, and at the present day are unknown. There may, in earlier times, have been such a period; and the elephantiasis of the present day may be only the constitutional affection which that disease has left behind it; but we see no grounds for such a belief.

The poison of syphilis is known; but the poison of the common exanthemata is unknown; and the poison of elephantiasis is equally unknown. This unknown poison, whatever its source, whether malarious or organic, produces a slow disorganization of the blood; the blood, having reached a certain stage of disorganisation, occasions paralysis of the vasomotor nerves of the capillary plexus, let us say, of the skin; the capillary vessels lose their contractile power and become dilated; a congestion results; this congestion occurring in rounded spots in the vascular layer of the corium of the skin is the exanthema of elephantiasis. The exanthem may be a single congested spot, say on the cheek, as in Case 9, or it may be a sprinkling of similar spots more or less numerously, and more or less extensively distributed over the limbs, the trunk, or the entire surface of the body.

In the early stage of the disease, the exanthematous spot is the only pathological lesion of the skin; but after awhile, with or without a febrile paroxysm, and as a consequence of a further exhaustion of vital power of the part and possibly of the entire organization; the congested spot relieves its vessels by transudation of the serous portion of the blood into the intervascular tissues. The spot is no longer simply coloured; it is hard to the touch, it is elevated; sometimes the elevation is of small extent and dense, constituting a tubercle; sometimes it is broad, constituting a circumscribed blotch. In either case the surrounding cellular element of the corium and subcutaneous tissues sympathises; the former becomes thickened, the latter œdematous; the skin acquires an aspect of coarseness resembling the rind of an orange, commonly, but erroneously, expressed as an enlargement of the pores of the follicles, while the infiltration of the cellular tissue produces puffiness and swelling.

When first seen, the exanthematous spot is a mere erythema or blush; after a while, a distended vascular network makes its appearance and occupies its area; while later still, the vascular network disappears, and a few straggling venules remain in its place. Co-

incident with these changes, the affected spot is at first opaque like the surrounding skin, and subsequently semitransparent like the outer covering of brawn, and as though gelatinized. As the appearance of gelatinification advances, the vascularity of the skin diminishes, and when it reaches the highest point of transparency, then a few scattered venules are all that remains of its original vascularity. Tested with the microscope, the gelatinous tissue is found to correspond with the lowest and most immature form of cellular tissue; it has undergone a complete structural degeneration, and like fœtal cellular tissue is made up of multinucleated cells in process of proliferation, surrounded by a gelatinous albuminous element and fat-cells. It is manifest that the lowered vitality of the part has resulted in structural degeneration; and that this structural degeneration is the preliminary stage of atrophy and ulceration. In the former case the skin becomes thin and smooth like a cicatrix, and like a cicatrix loses its normal texture and pigment; in the latter case it passes into a state of unhealthy suppuration or destructive ulceration which sinks through the investing soft tissue down to the bone.

Gelatiniform degeneration is not an uncommon process in the pathology of the skin; we have described it in connection with the third period of syphilis, and also in lupus non-exedens, and in both instances, as well as in lupus erythematosus, it is accompanied with atrophy. While in tertiary syphilis the structural changes preceding the state of atrophy, are similar to those above noticed in relation to elephantiasis;—there is the cutaneous blush; the hypertrophy of the capillary plexus; the transparency of the infiltrated tissue; its subsequent disappearance; and the depression caused by the absorption of the degenerated tissue, in other words, atrophy resulting in a cicatrix, where no superficial solution of continuity had previously existed.

The cutaneous phenomena of elephantiasis, being under our visible observation, are the first to attract attention; and they are by no means the least important, inasmuch as the morbid processes which we are enabled to see in progress there may be shown to be identical with those which are taking place in hidden parts of the economy. In the skin we have the erythematous blush, of a red, verging on blue, the intermediate tints being lilac, rose, purple, and livid, more and less intermingled with the yellow and the green of cachexia. Then we have an excess of black pigment, deposited in the skin, resulting doubtless from a destructive metamorphosis of the red particles of the blood. And lastly, we have the destructive degeneration of the tissues of the skin, and the consequent removal of the pigment and atrophy; leaving in its place the white spot of *leuce*.

Our cases also illustrate an affection of the mucous membrane, similar to that already described in the skin; the conjunctiva sometimes congested with a network of dilated capillary vessels; sometimes anæmic and streaked with small venules, and sometimes infiltrated and thickened; the mucous membrane of the nares exhibiting similar changes, as evinced by dryness and obstruction of the nostrils, sometimes copious mucous discharges, the latter being occasionally tinged with blood, as though the distended capillaries had yielded to the pressure of their contents, and had given way. Then the spotted buccal membrane, the palate, and the fauces; the thickening of the columns of the soft palate; the enlargement of the mucous glands of the pharynx; and the thickening of the mucous lining of the glottis and chordæ vocales, rendering the voice hoarse, and destroying its power. Then at a later stage of the disease, albuminaria, chronic diarrhœa, and dysentery, conjoined, as proved by post-mortem inspection, with congestion of the kidneys, and enlargement and ulceration of the mucous glands of the intestines.

But there is another phenomenon, of the first importance in connection with elephantiasis. Heretofore we have regarded only the surface manifestation of the disease, cutaneous and mucous, that form of manifestation, which exhausting its violence on the skin, gives rise to no very serious organic symptoms; which however carries the morbid processes in the cutaneous tissues to their highest point of development, which produces tubercles on the face and on other parts of the body, and causes deformity of the features, without a corresponding exhaustion of the general powers of the economy, which, in fact, constitutes *tubercular leprosy*. The other phenomenon to which we refer being an affection of the nervous system. Tubercular elephantiasis may run its course, even to a fatal issue, without pain; but, occasionally, pain takes a prominent part in the phenomena, and we are made aware from the first that we have before us a disease in which the nervous system is specially involved; this is *anæsthetic leprosy*. The pains sometimes seem to be confined to the skin, and are associated with the cutaneous exanthem, and sometimes they shoot along the limbs assuming a fugitive, an intermittent, and at a later period, a permanent character.

Pains may be present at all the three periods of the disease; they may be too slight to attract attention in the latent period, and be set down to neuralgia or rheumatism; they may be acute and wearisome in the febrile period; and they may accompany the persistent period to the end, and be the chief symptom of the presence of the disease. Danielssen and Boeck have shown that the pathological changes, which give rise to the nervous pains, are identical with those already described as taking place in the skin, that there is congestion of the capillary plexus of the sheaths of the nerves, giving them a deep red colour, followed by the exudation of a viscous gelatinous fluid, which infiltrates the cellular tissue of the sheaths, and the connecting tissue of the nervous fibrillæ, and distends the nervous trunks to double or treble their natural size, causing them to become so big that they can be felt, and sometimes seen through the integument.

In the cutaneous exanthem the nervous plexuses are necessarily pressed upon by the enlarged and distended capillary vessels, and the congested skin becomes painful and highly sensitive to the touch, constituting *hyperæsthesia*, while an increase of the pressure by exudation benumbs the sensibility of the skin, and induces *anæsthesia*. Hence with the erythematous congestion there is commonly an augmentation of sensibility, while a few weeks or months later the tender part may have lost its sensation more or less completely, and may be pinched or pricked without exciting the attention of the patient; and sometimes, as we see illustrated in Case 13, the sensation of the part may be destroyed without any foregone pain, and without any notice to the patient of the morbid process being in operation.

The neurotic affection of elephantiasis begins at the periphery, and proceeds towards the centre; the cutaneous nerves are first destroyed, then the nervous trunks that supply those nerves, and slowly and by degrees the nervous centres, namely, the spinal cord and the brain. At first and for years these morbid changes are attended with fugitive and shooting pains; but ultimately they terminate in perfect insensibility, so that the knife may be used without pain, or a taper may be held to the affected skin, without being discovered by the patient.

In Case 9 it is mentioned that a part of the foot or hand of the patient was seized with a dull aching pain; that in a few days the pain ceased, and a blister formed upon the painful part; the blister broke, its exudation was discharged, and the part healed. This process began in the foot, then attacked one hand; at a later period both feet and both hands. The pathological operation was in each case the same—a vascular congestion involving a branch of a nerve, and producing hyperæsthesia and pain; then an exudation into the nervous sheath, producing pressure on the nervous filaments, and benumbing

their sensation ; then effusion upon the surface of the corium, and the production of a blister. The process is not very dissimilar to that which occurs in chilblain, and in both instances is attributable to the lowered vitality of the part, the material difference being that the one is referable to a temporary and the other to a permanent cause.

But after a time the blister no longer heals with the readiness that it exhibited at first ; the skin ulcerates, and a sore is formed which may remain open for months or years, and continue discharging an albuminous and semipurulent secretion ; or, it may happen that a part of the integument of the foot or of the hand becomes painful and swollen, and in a short time shows signs of suppuration. It soon after bursts, and discloses a deep ulcer, which discharges copiously a semipurulent and thick viscid albuminous fluid. The ulcer is insensible, and is deeply excavated ; but after a time ceases to discharge, dries up, and heals, leaving behind it a bluish white, thin, and smooth cicatrix.

After a preliminary ulcer of this kind other ulcers are apt to form in the same manner ; generally one only at a time, and most frequently in the first instance on the foot. The new ulcer shows no disposition to heal, but sinks deeply into the substance of the part, wasting the soft tissues until it reaches the bone ; then the exposed bone loosens, if a toe it will probably be the middle phalanx, if the sole of the foot it may be a tarsal bone ; in either case the loosened bone is discharged after a time through the ulcerous opening ; the ulcer contracts, the sore heals, and the member is distorted by the loss of its osseous support ; a toe or a finger, or several toes or fingers, may thus be drawn back upon the dorsum of the foot or hand, or inwards upon the sole or palm, or the foot may be clubbed.

One of the most striking of the features of anæsthetic leprosy is the great relief which is afforded to the whole system of the patient by the abundant discharges which take place from these ulcers. So long as the discharge continues the patient enjoys a state of comfort, but the moment it ceases, fugitive pains and febrile symptoms are set up in the economy ; sometimes a low form of delirium ; and are again relieved when a new ulcer forms and runs through the same course as its predecessor, to the destruction and loss of another bone, and the consequent production of further distortion and deformity. These ulcers are usually confined to the extremities—the feet and the hands, and owe their origin to the loss of nervous power, occasioned by the morbid changes already described as taking place in the nervous system. Danielssen and Boeck remark that the first ulcer robs the foot of a middle phalanx, subsequently other phalanges, with the metatarsal and the tarsal bones, are lost, until the entire foot is amputated by a painless operation at the ankle joint ; the cartilage of the joint possibly blending with the cicatrix of the integument. As we have before remarked, these ulcers are commonly solitary, first attacking one foot, then, perchance, a hand, then the other foot, and then returning to a hand. The relief to the general system resulting from the discharges from these ulcers is probably derivative in its operation.

A sensation of coldness of the surface and of the extremities is a common symptom of elephantiasis, and is generally associated with anæsthesia, and not with an actual reduction of temperature. Cases 3 and 12 are examples of great suffering from the sensation of cold ; the hands and feet were warm to the touch, while the sensation of the patient was one of icy coldness. In advanced stages of the disease Danielssen and Boeck have observed a real reduction of temperature , amounting to upwards of twenty degrees of Fahrenheit (10° Reaumur) in the hands, and nearly five degrees (2° Reaumur) in the mouth, anus, axillæ, and groins. Under these circumstances the sufferers are comfortable only when placed close to the fire, or covered up with bedclothes. The gentleman whose state is reported in Case 12 wore warm gloves in his apartment in the summer season, and at the same time had a fire in his room.

When elephantiasis makes its attack before puberty the functions of that period are delayed or suspended ; in males the hair of the beard fails to be produced ; the voice and manner remain puerile ; and in females menstruation is deferred, and is ultimately deficient and irregular. After puberty the male generative system may possibly be unduly stimulated. Cases 2 and 11 had contracted syphilis, and both these patients suffered considerably from nocturnal emissions and the exhaustion attendant on that disagreeable affection. Among the females it will be seen that Case 9 became pregnant for the first time, and after eight years of marriage, subsequent to the invasion of the disease ; that her general state of health improved during the pregnancy, and that she was safely delivered, at the full period, of a remarkably fine child.

Treatment.—In seeking to establish a principle of treatment of elephantiasis we must endeavour to arrive at some conclusion with reference to the nature and cause of the disease as well as with regard to the signification of its pathological phenomena. It seems probable that the morbid influence under which the disease is generated is a *malaria*, and that in its nature the disease is an *exanthematous intermittent fever* of the asthenic type. We hear of it first as prevailing on the banks of the River Nile, and thence spreading along the coast of Syria, of Turkey, and Greece, and through Italy and France into England. From England we find it moving northward into Scotland, and thence to the coasts of Norway and Sweden. Uninfluenced by climate, and existing at the same moment in the tropics and near the pole, it remains true to its selection of the coasts of the sea or the borders of large rivers. Pursuing the coast of the Red Sea it may have found its way to Hindostan, to China, and to the islands of the Indian Ocean. Some of the most prolific nests of the disease are to be met with in this region, namely, in Madagascar and the Mauritius. And following the coast of Africa in a westerly direction, it has accompanied the African race in their migration to South America and the West Indies.

The causes of elephantiasis, whatever they may be, tend to the production of a *diathesis*, and such diathesis is transmissible by generation. Our cases also favour the supposition of the existence of other modes of transmission, namely, by lactation, by vaccine inoculation, and by syphilitic inoculation. The first of these methods of contagion lies beyond the reach of remedy, the others are preventible. But whatever the origin of the disease, the principle of treatment must in every case be the same. On the suspicion of the existence of the disease, and during its latent period, our endeavour must be to prevent the maturity of the diathesis. The febrile period must be controlled by antiphlogistic remedies, and the persistent period treated with a view to the maintenance of the natural functions, to the support of the powers of the constitution, and by such specific means as experience has shown to be useful in this disease.

The first effect of the malarious poison on the system is to produce malassimilation ; we must, therefore, endeavour to improve assimilation. And, to this end, we may expect to find quinine, nitro-muriatic acid with a bitter infusion, small doses of arsenic, and saline aperients, combined with the use of mildly stimulating baths, generous diet, good air, and regular exercise, of great service ; or, we may conjoin with a tonic-aperient system the administration of catalytic remedies, such as the sulphites, to neutralize the operation of the morbid processes in the blood. And in some instances we may expect results from the nutritive influence of cod-liver oil. The baths specially adapted for this disease are the ammonia bath, and the nitro-muriatic acid bath.

The febrile period is to be combated with the ordinary saline treatment and mild aperients.

The persistent period will demand an extension of the plan laid down for the latent period, with the addition of more decided tonics such as the tincture of the sesqui-chloride of iron, iron with phosphoric acid, the citrate of iron and quinine, iron with arsenic, quassia, and a continuance of the catalytic remedies and baths.

Assuming elephantiasis to be a mal-assimilation originating in malaria, we should not *à priori* expect to derive much assistance from mercury and iodide of potassium, the great emunctory remedies so valuable in syphilis; and experience has proved that these remedies employed as emunctories have been more injurious than useful in this disease. Cases 11 and 12, under an erroneous diagnosis were both treated largely with mercury and iodide of potassium, and the symptoms of the disease were certainly aggravated by the remedies. Nevertheless I can conceive the existence of circumstances that might render the administration of mercury and iodine in a modified form of considerable utility. Iodide of potassium is suggested not only on account of its antisyphilitic powers, but also as a remedy against the neuralgic pains, and an absorbent of the deposits accumulated in the tissues constituting thickening and tubercles. The opinion of Danielssen, however, on this point is far from being encouraging.

Case 1.—*Elephantiasis tuberculosa; duration of latent period, two years; total duration, five years; no pains; febrile attack simulating rubeola; vaccinated from a native child.*

A young gentleman, aged 16, with fair hair and complexion, and somewhat more youthful in appearance than might be expected of his age, has been afflicted with the tubercular form of leprosy about five years. He was born in Ceylon, is the son of European parents, and one of six children, all of whom are healthy. His father and mother have always enjoyed good health, the father having resided in Ceylon for 20 years, the mother since her marriage. He was nursed by his mother, but vaccinated with lymph taken from a native child.

Our patient was sent to England for his education at the age of nine; he had suffered from dysentery while in Ceylon, but had recovered and was in good health on his arrival in this country. About two years after that period his mother remarked an alteration in the appearance of his countenance; it was pallid, had a yellowish brown tint, and was somewhat spread out, as though the features were enlarged and flattened; he shunned amusements; was fond of sitting alone and secluding himself; became remarkably timid, and had frequent fits of crying. There was no alteration of the animal functions and no suspicion of his being out of health; his peculiar habits being attributed to idiosyncracy rather than to disease. In March 1863, when he was thirteen years and three months old, he was seized with an exanthematous fever, which was regarded as rubeola, and which confined him to his room for 14 days. There was nothing unusual in the febrile symptoms; he was chilly and sleepy; had headache, thirst, and loss of appetite; and, being sent to bed, an exanthem appeared upon his body, chiefly he thinks on his legs. He does not remember if he had coryza and catarrh; but he was the only boy in the school seized with the disorder; and the spots which then broke out upon his skin became permanent, and have remained so until the present time.

His face and the uncovered parts of his neck are of a reddish brown hue, contrasting strongly with his light hair and the normal fairness of his skin; the deepest tint of brown with a yellow tinge is apparent on the forehead, and a roseate and purplish tint plays about his nose and ears. His hands are deeper in hue than his face, and are of a blackish brown or bronze colour. These are the three varieties of colour commonly met with in the skin in this disease; a brown, which is sometimes reddish or copper coloured, sometimes yellowish, and sometimes blackish, or melasmic, or bronze coloured. On removing his clothes the brown tint was found rising up the arm to the shoulder and from the foot to the groin, becoming lighter in its ascent and leaving the trunk of the body of its normal, fair-complexioned tint. The feet are of a livid brown colour and always cold.

The skin of the face is of an uniform tint; there are no maculæ, but there is an evident swelling or thickening of the integument, which has altered the natural appearance of the features. The brow is somewhat heavy, the alæ of the nose spread out, and the ears prominent. The pores of the skin also are more apparent than usual from hypertrophy of the intermediate skin. But a more striking character perceptible on the face is a crop of small tubercles, two lines in diameter and one in elevation, sprinkled over the surface. About forty of these tubercles are dispersed upon the forehead, a cluster of fourteen being situated just above the root of the nose. A few of the tubercles are three lines, and three upwards four lines in diameter. The smaller tubercles do not differ in tint of colour from the surrounding skin, but the larger ones are semi-transparent, as though gelatinized and traversed by three or four minute venules. There is also an incipient nodulation of the anterior border of the helix of the external ear. Before leaving the face we may remark that the eyebrows are scanty and thin, there is a general baldness of appearance of the face, and the conjunctiva is pallid and traversed by hypertrophied venules.

There are no signs of disorder in the mucous membrane of the nose, mouth, or fauces; but the voice is weak and somewhat altered from its natural tone.

The tubercles on the face were originally maculæ of a pale pink colour, and were not elevated into their present shape until a year after the supposed rubeola. Similar spots were apparent on the lower limbs during the rubeolous fever, and are now to be seen on both lower and upper extremities, together with a faint roseolous rash on the front of the chest and abdomen.

The circular maculæ dispersed on the arms and legs have a reddish and yellowish brown tint, they are slightly elevated by transudation into the tissues of the corium, and larger on the legs than on the arms. For the most part isolated, and having an average diameter of somewhat more than two lines; they are here and there collected into circular blotches measuring nearly half an inch in diameter, and are variously elevated according to the amount of œdematous infiltration. They are seantily dispersed over the scapula, are numerous at the point of the shoulder and the back of the upper arm, but most abundant on the forearm, and are absent on the hands, their place on the latter being occupied by the bronzing of colour already mentioned and by a puffy œdema of the back of the metacarpus, more particularly at the radial side. On the lower extremities there is a cluster of raised maculæ over the buttock, a few on the upper part of the thigh, but many on the leg, and the instep like the back of the hand is puffed by œdematous infiltration. The maculæ are numerous on the soles of the feet, and the integument near the root of the toes is somewhat œdematous and benumbed. As we have already noted, there is no melasmic pigmentation of the skin of the trunk of the body, and the front of the chest and abdomen presents a faint roseolous mottling.

Turning to the mucous membrane, we find the conjunctiva pale on the inside of the lids, but congested on the eyeballs. He has had a feeling of "stuffiness" of the nostrils for about two years, and is subject to frequent attacks of catarrh. About six months back the mucus from the nose was streaked with blood. The mucous lining of the fauces is normal, and no change is visible in the neighbourhood of the glottis to account for his change of voice. His tongue is clean and appetite good, but he suffers occasionally from what he calls bilious attacks. The abdominal organs are apparently healthy, and his general condition normal.

He has had no pains or aches of any kind, nor any indication of affection of the nervous system, beyond a feeling of numbness in the sole of the feet, a numbness that extends up the right leg to the hip, and a constant coldness of the feet. These are symptoms which have scarcely attracted his attention, but may be the beginning of neurotic disorder. He sleeps well without dreams or discomfort, and although greatly depressed in spirits formerly and frequently weeping, he is now applying his mind cheerfully and hopefully to the study of the classics preparatory to commencing a professional education.

It cannot be questioued that this is a case of tubercular elephantiasis, for the skin and mucous membrane are almost solely attacked; there have been no neuralgic pains, and only a very trifling affection of the cutaneous nervous system. It must be noted also that the tubercles are not whitish as they sometimes are in tubercular leprosy, but transparent and yellowish, the tissue of the skin having undergone a gelatiuous metamorphosis, common in this affection, and met with also in tubercular syphilis aud lupus non-exedens and eyrthematosus. We have remarked above that the semitransparent tubercles are streaked on the surface by the straggling trunks of several minute veins. This case is interesting, also, as exhibiting the insidious and progressive character of the invasion of elephantiasis. With the exception of the rubeoloid attack, nearly three years ago, he has suffered no febrile symptoms whatever.

Case 2.—*Elephantiasis tuberculosa; ten years' duration; neuralgic pains; cutaneous anæsthesia; a brother fatally attacked with the mixed form of leprosy.*

A young man, aged 17 years and 10 months (1865), was born of European parents in Bombay, and resided in that city until April 1865, when he was sent to England for his health,

His father went from England to India at an early age, and held a civil appointment there; his mother was born in India of European parents. The father was twice married, and had children by both wives; seven by the first and four by the second. The mother was also married twice, and by her former husband had four children. She died, at the age of 32, of disease of the liver; and the father died at 49, of disease of the thoracic organs, when our patient was one year old.

Of the three sets of children, the first two families were healthy, and of the last, four in number, the eldest and the youngest became the subjects of elephantiasis; the two intermediate children, a brother and a sister, remaining sound. The eldest son died of mixed elephantiasis, at the age of 23 (Case 14). The youngest is the patient whose case we are now recording.

Our patient had good health as a child, and underwent the operation of vaccination with success. At the age of seven or eight, while at school, and without previous illness, he first perceived a brown spot or blotch upon the left forearm; subsequently, a similar spot appeared upon the outer side of the right leg, and after au interval, on the inner side of the left knee, and afterwards on the thigh. With the exception of the spot on the right leg, the right side of the body remained free until 10 years later. The spots were more numerous on the lower limbs than on the arms and occupied the region supplied by the cutaneous branches of the crural nerve in the leg and the internal cutaneous nerve in the arm. Subsequently to these appearances on the limbs, numerous spots, of the size of a small wafer, appeared upon the face and entire body.

Having his attention drawn to the occurrence of spots upon the skin, he noticed that their colour, at their first appearance, was a beautiful pink, that by degrees they assumed a purple tint, and subsequently faded to a dirty brown. At the present time there are examples of these shades of colour, excepting the early pink, on different parts of the body. There is a slightly-elevated tumour of about an inch in diameter upon the left cheek, the surface of the tumour being mottled with pink and purple, and a swelling over the ball of the thumb has the same tints, resembling a large chilblain. A similar swelling on the inner side of the left calf is knotty, and involves the saphenous vein, and the femoral glands on that side are enlarged. The colour of the principal spots may be compared to that of the mulberry; and when chilled they have a leaden hue.

The swelling of the blotches is a recent event, and did not occur until a year back, after he had become affected with chancre and was salivated for its cure. During this treatment he was feverish and ill, and lost his appetite. He then had "pains in the flesh;" these pains were followed by redness aud swelling, and, by degrees, the pains ceased. The attack of pains was periodical, occurring once a month; he lost them however during his voyage to England, and regained his appetite, but having become wet and chilled during the late inclement weather of October the pains have returned. They are not deep-seated, but simply cutaneous pains of the flesh, as he terms them; and he remarks that they had increased in severity at each recurrence.

During the prevalence of the pains "in his flesh" he has some degree of feverishness which comes on in the evening with chilliness, and while in bed is followed by burning heat, but he has no perspiration, aud his skin is commonly dry. When suffering from these feverish attacks he loses his appetite. He has also been troubled, since he left India, with nocturnal emissions; they take place for two or three nights in succession, and after a similar interval, and sometimes occur twice in the course of the night.

In the interval of the feverish periods aud the cutaneous pains his spirits are cheerful; he reads, and sees sights, and he enjoys himself. He sleeps well at night, and has no drowsiness during the day. He was taken from school at the age of 15, in consequeuce of the illness under which he now suffers, and was put into a merchant's office, where he remained uutil his present visit to Eugland.

In general appearance he is short and thin; his head is somewhat large for his body, and the face pale and tawny. The expression of his face is dull aud dejected; the skin is thickened and roughened by small whitish tubercles of about the size of a split pea, which have shown themselves during the last month, and the spaces between the tubercles mottled with a dirty brown tint. The only hair on his face, with the exception of the eyelashes, is that of his eyebrows, which are thin and scanty.

On closer inspectiou the integument of the forehead is seen to be thickened and nodulated, particularly in the region of the eyebrows. The eyes are dull, the conjunctiva pale; the nose enlarged and nodulated; the cheeks are also thickened and nodulated; and the ears preseut the same character. The heavy brow gives a pensive thoughtfulness to the face, and reminds us of the leonine countenauce characteristic of leprosy. Numerous small whitish tubercles, of the size of a split pea, are dispersed over the whole face, and on the left cheek is a large prominence, looking like a subcutaneous abscess, mottled with red and purple. This prominence is affected with the periodical pains already described, but is not teuder to the touch, on the contrary, it evinces a degree of anæsthesia, which is also met with in the similar swellings on his leg and arms.

It is evident that the manifestation of the disease has been accompanied by au arrest of development of the body generally, and the check to development is especially shown in the non-production of hair, not only on the face but upon the entire skin, with the exception of the head and pubes. We have already remarked on the thinness of the eyebrows, which gives a bald appearance to the face; and he informs us that his brother lost the whole of the hair of the pubes previously to his death.

The voice is puerile and weak and somewhat hoarse, indicating thickening of the mucous lining of the larynx; the columnar folds of the pharynx are red and swollen; he has a sensation of tickling in the fauces, and an occasional slight cough, which raises a small quantity of mucus. He complains of a bad taste in his mouth; the lips and tongue have a feeling of soreness, and the latter is pink towards the tip. The hoarseness has been evident for about a year; the affection of the mouth is recent.

His most annoying symptom however is a sense of fulness and dryness of the nostrils, which commenced eight months back; this inconvenience has gone on increasing, and within the last week has been accompanied with the discharge of a small quantity of clotted blood. There is evidently considerable swelling and thickening of the lining membrane of the nostrils and possibly some slight degree of ulceration, but, with this exception, there is no excoriation of any part of the surface of the body, and no tendency to the formation of blisters on the skin.

He sees and hears well, and his appetite is good excepting on the invasion of feverish symptoms and pains. The pains are, in kind, shooting and aching, and they are always followed by an increase of swelling and congestion of the inflamed blotches, of which there are not more than four or five dispersed over the body. Some of these blotches of longest duration are beginning to show signs of anæsthesia, but the insensibility is superficial and moderate in degree. And there is some degree of anæsthesia and loss of power of the left hand.

The hands are mottled, blue, and brown, and somewhat swollen, while on the inside of the wrist and ball of the thumb of the left hand is a swollen tuberculous blotch. The soles of the feet are covered with small brown spots as large as lentils, and some of these spots have been recently developed into whitish tubercles.

In summing up the special characters of tubercular elephantiasis as presented by this case, we are struck with the chronicity of its nature; already ten years in existence, and so little progress made; then, its first appearance as a single dark-coloured spot, followed slowly by other similar spots; next the periodical attacks of fever of no great severity preceding pains in a circumscribed patch of integument; then the roseate blush, the tumefaction, the purplish tinge, and the deep brown stain;—these symptoms repeated at longer or shorter intervals for years, and succeeded by a moderate amount of anæsthesia, but as yet no leucosmic change. Next the signs of morbid action in the mucous membrane, the hoarseness of voice, the dryness and obstruction of the nares. Then the nodulated thickening of the integument of the forehead, cheeks, and ears, and the development of whitish tubercles. Moreover, the arrest of development and growth, and the absence of hair.

CASE 3.—*Elephantiasis tuberculosa; four years' duration; no pains; extreme chilliness; extreme mental dejection.*

A young gentleman, aged 21, born in Jamaica of European parents, was brought to me in 1850, affected with tubercular leprosy.

He had been sent to England in 1846 for his education; he arrived in September; the winter was severe, and he suffered very much from the cold. During the following year, he first observed reddish brown maculæ on the legs below the knee; a year after they appeared on the face, and twelve months later spread to the trunk. With the development of maculæ on the limbs and body, the face, the hands, and the feet became discoloured; the face had a deep reddish brown hue; the hands were of a blackish brown colour, the discoloration extending up the arms to the shoulders and becoming fainter in its ascent; the feet were also deeply coloured, a livid blackish brown, and the colour rose upwards to the top of the thighs, being deeper below the knee than above. With the completion of the maculation of the body, the skin of the face and especially of the forehead, became coarse and thickened, tubercular elevations were produced along the eyebrows, upon the nose, lips, and chin, and upon the prominent ridges of the ears. The thickening of the integument of the brow gave a frowning and dejected expression to the countenance, the appearance of dejection being increased by the presence of a leaden or purplish tinge. The skin was as though pricked over with depressed points, the mouths of the follicles, while the interfollicular portions were puffed and semitransparent, and suggested the idea of the rind of an orange. The tubercles were firm to the touch, and somewhat more transparent than the surrounding skin. He had no whiskers or beard, and the hair had fallen from his eyebrows.

Close examination of the maculæ showed that the lining of the follicles was more deeply tinted than the interfollicular spaces; a condition that gave a spotted character to the maculæ. The skin was shining as though from a greasy moisture, but nearer inspection proved that this appearance resulted from the tumefaction of the corium; that the maculæ were really drier than the rest of the skin, and defective in perspiration and sebaceous secretion; and that, as a consequence, the face was liable to be much irritated by the rays of the sun. The maculated portions of the skin were likewise deficient in sensation.

The mucous membrane of the eyelids and mouth was paler than natural, the conjunctivæ were suffused, the nares somewhat obstructed, and the voice was weak and husky as though from thickening of the lining membrane of the larynx.

He was much depressed in spirits and incapable of applying himself either to amusement or study; his manner was listless and melancholic, while the redness of the conjunctiva, combined with the heavy brow and severe expression of feature, gave an occasional gleam of savageness to his countenance. He was not troubled with pains of any kind, but his hands and feet were habitually cold even in the summer time; indeed, he suffered more from the cold during the summer than the winter, and his favourite position was by the fireside. His hands, besides being deeply bronzed, were slightly puffed on the back; the fingers were attenuated; there was a visible waste of substance of the interossei muscles of the metacarpal spaces and loss of power of the fingers and wrists.

The general health of the patient seemed good; he had a fair appetite and the functions of the body were properly performed. He was behindhand in sexual development and instinct.

We were unable to follow the history of this patient further, in consequence of his leaving London.

CASE 4.—*Elephantiasis tuberculosa; no pains; ulceration of skin and mucous membrane; fatal issue in ten years.*

A young lady, the daughter of European parents, residing in the island of Mauritius, was brought to me in the summer of 1852, suffering under tubercular leprosy. Her countenance was pale, broad, and puffed, of a yellowish brown colour, with a purplish almost livid blush on the nose, cheeks, and chin. The brow was heavy and frowning, the eye sunken, anæmic, and glistening, and the general expression of the features listless and melancholic. Her hands were thin, the fingers taper, and with her feet were deeper in tint of colour than the face, the discoloration extending upwards upon the limbs. On the arms and legs were scattered a number of round maculæ about half an inch in diameter and of various tints of colour; they had come out successively, were flat and smooth on the surface, but hard to the touch, both the hardness and the colour becoming gradually diffused in the surrounding skin. The most recent of the maculæ had a delicate roseate tint, this became deeper with time, purplish, and livid; in some the redness had

entirely disappeared and a deep brown stain remained behind, and in three or four the centre of the maculæ was undergoing a process of bleaching, and formed a pale disc surrouuded by a halo of dark brown, fading at the circumference iuto the general tint of the skin. There was, besides, a feeling of numbuess of the limbs, a loss of sensation in parts of the skin, on the legs just above the aucle, and ou the older maculæ, moro particularly those that had uudergone the melasmic and the leucosmic change, and an arrest of perspiratory secretion.

The disease had probably existed in a latent state for some time before it was observed, the first symptoms that were noticed werc the exanthematous spots which immediately followed a slight intermittent fcverishness of a few days' duration. With the development of the spots the feverish symptoms subsided, but new spots were developed from time to time without thc recurrence of the febrile affection. The spots had first shown themselves two years before the time of my seeing her; and at the latter period she had no constitutional symptoms of any kind, excepting some degree of paleness of the mucous membrane approaching anæmia, coldness of extremities inapprcciablc to herself, and a certain listlessness, heaviness, sleepiness, and indisposition for exertion of every kind.

After an absence of six years, I again saw this young lady, and found that the disease had made serious progress. The face was covered with tubercles, her complexion was yellowish brown, the frowning eyebrows had lost their hair, the conjunctivæ were anæmic and glassy, the eyelids were drawn widely open, the hair of the head was scanty and presented a state of alopecia, the lobes of the ears were enlarged; her limbs were thin aud shrunkeu, hands and feet wasted, and fingers attenuated.

She died two years later at the age of 17, she suffered no pain and seemed to have no idea of her repulsive state. During the latter months of her life her vision was weakened; she had ulceration of the larynx, ulceration of the integumeut of the arms extending from the shoulders to the wrists, the legs were œdematous, the urine albuminous, the feet ulcerated, thick ichorous and semipurulent matter oozed from large openings in her face, and her failing powers were ultimately exhausted by diarrhœa and dysentery.

Case 5.—*Elephantiasis tuberculosa; insidious invasion and progress; fever of intermittent type; sharp exanthematous fever.*

A gentleman, aged 43, a captaiu in the Indian Army, who had resided in that country 17 years, noticed, while in Scinde, at about the 10th year of his Indian service, a spotted discoloration of the skin of his limbs accompanied with a brown discoloration of his hands, feet, and face. He was otherwise in good health, and performed his military duties without inconvenience.

Four years later he suffered from a succession of feverish attacks, intermittent iu their character, which progressively increased in severity for two years and rendered it necessary that he should return to Europe for relief. He describes his symptoms at this period as being a constant state of fever with exacerbations and rigors every other day. For these symptoms he was sent to Kissengen and after a course of the waters had an attack of his old fever of greater severity than usual, accompanied with cerebral symptoms which he called a "determination of blood to the head."

After a few days of this severe exanthematous fever uumerous fresh spots appeared on his body and limbs, while the spots on his forehead and face were raised into small tubercles. The fever then subsided somewhat suddenly and he had no return of the feverish symptoms up to the date of this report, namely, a year and a half.

His application to me had reference to the maculæ on the skin generally and the maculæ and tubercles on the face, he considered his health to be good, and looked upon the feverish attack at Kissengen as a bath crisis; his only present complaint was coldness of feet and hands, which was as troublesome in summer as in the winter season. His face, his hands, and his feet, at this period, were of a decp purplish brown hue, the discoloration extended up his limbs for some distance and half way down his neck, but the trunk of the body had not undergone the same melasmic change, although it was sprinkled over with small round maculæ and blotches of various size. Along and immediately above the eyebrows were 12 or 14 prominences at each side, of about the size and elcvation of a split pea; in the lower part of the skin of the forehead and towards the inner end of the cyebrows the tubercles were isolated, along its outer half they were clustered and confluent. On close examination the tubercles were whitish aud semitranspareut aud streaked by the ramifications of several small venules, tho cuticle covering them being of a dark colour like that of the surrounding skin. The hair of the eyebrows was thin and absent on the tubercles, while thc dusky hue of the skin of the forehead and the heavy frown of the rugous and hairless eyebrows gave a strongly marked *leonine* character to the countenance.

The hands were thin, the interosseous muscles of the metacarpus shrunken, particularly those of the first metarcarpal space. The fingers had a leaden hue, and the skiu was smooth and polished, shining with the metallic lustre of lead or oxydised silver. On the limbs some of the blotches were raised by infiltration and semitransparent, others had undergonc a partial absorption and were collapsed and wrinkled, but all the older blotches were dry from the absenco of cutaneous secretion and less sensitive thau the surrounding integument.

Case 6.—*Elephantiasis tuberculosa; insidious invasion and progress of the disease; absence of pains or fever; death in six or seven years.*

A gentleman in the judicial service of India, aged about 60, who had resided in the East for upwards of 20 years, consulted mc in 1857 for tubereular leprosy. The whole face, including forehead, cheeks, uose, lips, chin, and ears was studded with opake tegumentary tubercles of about the size of a split pea, a few being larger. There were also a number of maculæ dispersed over the limbs and some on thc body.

He considered his bodily health to be good, he had suffered no illness of any kiud, and consulted me only for the eruption which had made its appearance two years before and had somewhat increased. He was listless and dull in his manner and seemed incredulous of any aberration of health, ascribing his want of energy to the exhaustion consequent on a resideuce in India for many years. I lost sight of this gentleman a few months after his first visit to me; he returned to India, and I have since heard of his death. The duration of the disease in his case was six or seven years.

Case 7.—*Elephantiasis tuberculosa; insidious invasion and progress; extreme dejection; smart febrile attack; leontiasis.*

A captain in the Indiau army, who had served through the mutiny, first observed symptoms of tubercular leprosy in 1857, and came before me for consultation in 1860. At this period his face presented a deep malasmic discoloration, and was covered with tubercles, which gave a frowning and morose expressiou to his countenance. The conjunctiva was reddened by congestion; his feet and hands were dark brown and purplish in colour, cold, and swollen. The limbs and body were sprinkled over with maculæ. His voice was husky, and his manner dejected, listless, and melancholy. Hc was sleepless and restless at night, and during the day, would sit for hours in his chair without occupation and without attempting to make auy exertion.

He had a severe febrile attack, resulting as usual in an increase of the exanthem, and greater prominence of the tubercles, while under my care; and presented a good example of the kind of countenance, sombre and frowning, which has been compared to that of the lion, and has gained for the disease the synonym *leontiasis*.

This gentleman left London a few months after my seeing him, and I was unable to follow his case further.

Case 8.—*Elephantiasis tuberculosa; intermittent febrile attacks; neuralgic pains; anæsthesia; ulceration; death from chronic diarrhœa and dysentery; Satyriasis.*

A colonel in the army, aged about 60, and who had spent many years in the West Indies, became the subject of tubercular leprosy about 10 years before he came under my notice in 1856. He died of asthenia from chronic diarrhœa and dysentery in 1859; the disease had existed altogether about 14 years, and he believed it to have arisen from sleeping in an unclean bed in a negro's hut.

The appearance of this gentleman was very remarkable, his countenance resembling that of a Satyr as represented in the paintings of the Italian masters, and suggesting one explanation of the term Satyriasis, as applied to this disease. His features were large, and of a deep red-brown or copper colour; the forehead deeply wrinkled and studded with tubercles; two of the tubercles at the upper angles of the forehead resembling young horns; the brow was thickened, heavy, frowning, and deprived of hair; the eyes suffused with redness; the nose, lips, and chin large, and sprinkled with tubercles; the cheeks hollow, and the ears tuberculated, projecting, and singularly elongated. His voice was hoarse and sonorous, his speech indistinct; he breathed noisily through the larynx and nose; and the mucous membrane of the fauces was covered with small tubercles, some in a state of ulceration.

His hands were of a dark colour and swollen; the discoloration extending upwards to the shoulders; the trunk of his body was spotted with large yellowish brown blotches, composed of an aggregation of maculæ, the interspaces of the blotches being mottled with separate maculæ. His arms and legs were similarly spotted, and the feet swollen, œdematous, and somewhat insensible. Moreover, on the heel of one foot was a large superficial ulcer, which was insensible to the touch or the application of caustic, and which poured out a copious glairy albuminous and semipurulent secretion.

During the four years this patient was under my observation he had repeated febrile attacks, accompanied with neuralgic pains of a fugitive character, and followed in each instance by an augmentation of the exanthem, and an increase in the number of the tubercles. Superficial ulcerations formed and healed on his feet and hands, and he ultimately sank from asthenia, consequent upon chronic diarrhœa and dysentery.

Case 9.—*Elephantiasis anæsthetica following vaccination; insidious invasion; suspension of symptoms during pregnancy; neuralgic pains; vesication; anæsthesia.*

A lady, aged 26, the wife of an officer of the Indian army, became affected with elephantiasis in 1861. She was born in Calcutta of European parents, and brought to England when two years old; she returned to India in 1853; was married in 1855; has been eight years married, and has now visited England for medical treatment; the length of her residence in India being 10 years.

In 1861, being then in Oude, she was vaccinated from a native child, and shortly after the vaccination "a slight spot came on her cheek, and increased in "size to the diameter of a shilling." The spot was hard to the touch, a little raised above the level of the surrounding skin; of a dull red colour, and without pain or tenderness. The swelling was painted with iodine, and afterwards blistered several times and the blister kept open, but, although somewhat reduced in size the prominence was not removed.

About six months later dull-red flat spots appeared, dispersed over the greater part of the body. Her hands and feet became swollen, and she had pains of some severity in her joints and feet.

She reports that at the present time (1863) her health is good; she has a good appetite, and digests well. Her pulse, however, is feeble, and menstruation scanty, and she has had no family.

The spots on the skin vary in size from a quarter of an inch to an inch in diameter; some are mere erythematous blotches; these assume a dusky brown tint; then the brown colour is discharged, and patches of white take their place. The first spot that appeared had a prominent character from the beginning, the elevation being occasioned by serous infiltration into the cutaneous tissue. Two or three other similar prominent blotches have formed subsequently. That on the face retains its brown colour, while around it is a ring of white, and, bounding the ring of white, a deep tint of brown, which fades away gradually into the surrounding skin.

In this case are seen the dull-red erythematous blotches characteristic of the disease; secondly, the brown blotches verging to black; thirdly, the bleached and colourless blotches; fourthly, the prominent blotches caused by serous infiltration of the tissues of the skin; and fifthly, the insensibility or anæsthetic element. Her hands and feet have a benumbed feeling; she picks up small objects with difficulty, and there is a degree of loss of power of the lower limbs.

Her symptoms were much alleviated by her voyage to England; the hands and the feet were better, and the right hand and left foot alone retained some degree of swelling, with occasional pains. Another circumstance interposed to afford her relief: she became pregnant, and was safely delivered of a fine healthy boy in January 1864.

She remained pretty well after her arrival in England until August 1863, when she was attacked with neuralgic pains; the pains began in the right arm and were somewhat severe, then they extended to the back of the right hand, afterwards to the back of the neck and to the feet, and then became diffused over the whole body. This attack of neuralgic pains was accompanied with rigors and general feverishness. It lasted a fortnight; on the two last days she had a severe pain in the right side, which was ascribed to the liver, and then the pain ceased entirely; she felt well, but somewhat debilitated. She had previously been subject to frequent fits of sneezing, which had now abated; she had less thirst; the maculæ were fainter, and the bulk of the limbs was somewhat reduced.

In the early part of December, having been unusually well since the attack in August, she suffered pain in her right hand; after a few days a blister formed suddenly over the painful part, and broke; it refilled several times, and then the skin healed.

On the 29th of January the lady was confined, and she remained without pain or uneasiness of any kind until the 25th of February, when a severe neuralgic pain occurred in the left foot; after a few days a blister suddenly appeared over the painful part, it broke, and after refilling several times disappeared. A month later she experienced neuralgic pains in the right hand and left foot at the same time, the ankles of both legs were painful and swollen, the legs up to the knee tender to the touch, and the soles of the feet œdematous and sensitive. These symptoms were succeeded by a blister on the hand, and another on the left foot, followed, as in previous instances, by a relief from pain. A similar attack of swelling and pain occurred in the left hand nearly three months later, namely, in June, and was attended with similar relief.

At this period the hands were both somewhat swollen and stiff, sometimes cold and sometimes be-

numbed; the fingers were taper in figure, and the skin stained of a dark purplish brown. But the digestive organs continued normal; her spirits were only occasionally depressed, and she regarded her health as good. The time had now arrived for her return to India with her husband, his furlough having expired, and I have had no report of her health since.

CASE 10.—*Elephantiasis anæsthetica; exanthema; neuralgia; febrile attack, continued and intermittent; œdema; albuminaria; emaciation.*

A young lady, aged 19, a native of Hindostan, became the subject of anæsthetic leprosy at the age of 14. The disease made its appearance as an elevated œdematous semitransparent blotch in the middle of each cheek. The blotches gradually increased in size, while other blotches were developed on the forehead and on the prominent parts of the ears. The blotches were in the first instance sensitive, subsequently they lost their sensibility. At the same time with, or soon after, the appearance of the blotches on the face, raised blotches and flat maculæ of a dull red colour occurred upon the body and limbs; the hands and feet became somewhat swollen and œdematous, and of a darker colour than the rest of the skin.

Concurrently with the development of the maculæ and blotches she suffered from occasional attacks of pain in the lower limbs, the loins, and the chest. These pains were in some instances excited by cold winds; but, after a time, it was found that the skin of the legs and feet had lost its normal sensibility. Hot fomentations with mustard, intended to relieve the pains, occasioned blisters without being felt by the patient, and one or two indolent and insensible ulcers were produced, which healed with difficulty, and are apt to re-open from time to time.

The mucous membrane participates in the general physical disorder; the conjunctivæ are streaked with enlarged venules; the membrane of the nares has lost its sensibility to strong odours; she has frequent attacks of sore throat, and her voice is weak and hoarse. Menstruation likewise is deficient and irregular; she is losing her hair; and she is dull, listless, and indisposed to exertion or amusement.

This young lady first came under my notice in May 1865. In the subsequent autumn she was attacked with febrile symptoms, which were at first continuous, and afterwards intermittent. The febrile symptoms lasted for about two months, and were accompanied with albuminaria. She was much reduced by this attack; was debilitated and thin; but her appetite returned, and continues good.

CASE 11.—*Elephantiasis anæsthetica; occurring after syphilis; possible origin in contagion; maculation; febrile symptoms; hyperæsthesia; anæsthesia; ulceration.*

A young medical officer of the Indian army, aged 23, born in Ferozepore of English parents; always enjoyed good health, with the exception of an attack of intermittent or jungle fever in 1854, which lasted four months, until four years back, when his present illness commenced. His parents, with two brothers and one sister, have excellent health. From his infancy he was somewhat darker in complexion than his brother and sister; but during the last few years, and especially during the last 12 months, has become swarthy, and at present is darker than a native of India, the swarthiness not being limited to the exposed parts of the body—the face and the hands, but pervading the whole skin, and being greatest on the lower limbs, and especially on the legs and feet. His hair is black and straight, but originally somewhat curly; the eyebrows also are black, and he has a small moustache and beard of the same colour, but no whiskers.

In the month of August 1861 he had a soft, sloughing venereal sore upon the corona glandis, for which he was treated very actively with mercury, and severely salivated. At the commencement of his treatment he took two grains of calomel every two hours, and continued a modified mercurial course for four months, by which time the sore had healed. After the healing of the sore he had some congestion of the fauces, which yielded to a gargle, and passed away in a few days.

On the 7th of March 1863, having remained well since 1861, he again had a venereal sore, this time a hard chancre on the exterior of the prepuce; he treated the sore himself by local means, dusting it with calomel, and keeping it moist with black wash; it healed in three weeks.

On the 16th of April, 19 days after the cure of the hard chancre, he had his attention called, by some companions with whom he was bathing, to a spotted state of his skin. The spots were circular in figure; of a reddish brown colour, and dispersed over the trunk of the body, some few being visible on the forehead. The spots gave him no uneasiness, and no further attention was paid to them.

In the month of October following he experienced some shooting pains in his limbs, they were occasional, not severe, and deep seated, seeming to him to be fixed in the bones.

In December, an additional symptom of his disease, namely a puffy swelling of the hands was first noticed; and this, like the spots, not by the patient himself, but accidentally, by a companion. The swelling was unattended with pain.

In January of the following year, 1864, the appearance of his face attracted the attention of his superior officer while on parade, and he was ordered to his quarters by the Deputy Inspector General of Hospitals, under the impression that he was labouring under symptoms of secondary syphilis. He had no feeling of illness and was not aware of any symptoms of disease beyond the spotted appearance of the face already adverted to, and which, at this time, had been in existence for nine months, latterly somewhat more conspicuous than at first. Being now put upon the sick list for supposed secondary syphilis he was ordered three grains of iodide of potassium in decoction of sarsaparilla thrice daily. After a month as no impression was made upon the spots the dose was progressively increased to eight grains three times a day, and with a similar result; he, besides, took a warm bath containing chlorate of potash every night.

Becoming tired of treatment, and experiencing no beneficial result from the medicine he had taken, and at the same time believing himself to be in good health, he obtained permission to remove to another station, and went to Cawnpore in medical charge of a military detachment—a nineteen days' march. On the journey he experienced considerable dryness of throat, debility, palpitations of the heart, loss of appetite, feverishness and sleeplessness at night, shooting and aching pains in his bones, drowsiness by day, and extreme depression of spirits, and, these symptoms increased in severity after his arrival at Cawnpore.

Feeling at this time really ill, he demanded examination by a Medical Board, and appeared before the Board on the 1st of April 1864. The maculation of his skin had rapidly increased after its first appearance, had spread over the whole body, and was accompanied with thickening of the integument. His conjunctivæ were congested, as also were the fauces, but he had no feeling of soreness of throat and no ulceration of the mucous membrane. The deep-seated pains in his limbs had also somewhat increased; he was feverish, restless and sleepless at night, languid by day, particularly in the morning, drowsy and unequal to the exertion required by his duty, he had frequent attacks of palpitation, and loss of appetite. To these symptoms were added, subsequently to this date, nocturnal emissions, sometimes occurring twice in the night.

The "case" of the patient was thus reported by the Medical Board:—"In April 1863 he first noticed "some copper-coloured blotches on his face and ex-

" tremities, these have gradually increased and now " cover his entire body. Last October he was " attacked with rheumatism chiefly affecting the ex- " tremities, from which he has suffered more or less ever " since, and is now quite unfit for duty. I therefore " recommended him for three months leave, and that " he be removed to the General Hospital, Allahabad, " for treatment. Treatment :—Hydrargyri bichlo- " ridi ; potassæ iodidi ; iron tonics."

He remained under treatment in the Allahabad Hospital from April until September, pursuing the prescribed treatment, varied at intervals with mercurial fumigations, nitro-muriatic acid, quinine, and arsenic. He states that he felt more unwell at the end of this period than he did at first, and he again went before a Medical Board. The report of the Board recapitulates the occurrence of primary syphilis followed by secondary syphilis. "On admission in " April last his body was covered with a copper- " coloured eruption, the eruption being attended " with considerable thickening of the skin in the " part engaged; he suffered a good deal from noc- " turnal pains, and at a late period from sore throat. " His general health was also in a bad state, and " during the past hot season he was much debilitated. " Latterly he has suffered from nocturnal emissions " and palpitation of the heart. The eruption is very " much better now, and he is in better health, but he " still remains considerably debilitated and hypo- " chondriacal, a state which the nocturnal emissions " tend to keep up. As I believe that ——— requires " a complete change of climate and a sea voyage for " the recovery of his health, I recommend that he " be permitted to proceed to England on medical " certificate, &c."

In November all medical treatment was given up ; he sailed from India in January and reached England on the 18th of May. Arrived in London, he put himself under the care of an eminent hospital surgeon, who took the same view of his case as his medical advisers in India. He was fumigated with calomel until his gums became sore ; and making no progress, was seen in consultation by another surgeon distinguished for his knowledge of syphilis. He had now been three months in London; the diagnosis was still syphilis, and it was agreed in consultation that he should go to the seaside for awhile, to regain his strength, and on his return to London that he should be thoroughly mercurialized. Having so recently had a sea voyage without any profit to his health, the patient preferred an inland place and went to Malvern, where for a short time he was submitted to hydropathic treatment.

Such was the state of the case on the 4th of September 1864 when the patient addressed to me a letter from which the following is an extract :—"I " have been suffering from constitutional secondary " syphilis for the last two and a half years; my body " is entirely covered with large copper-coloured " blotches attended with considerable thickening of " the skin, and my general constitution is extremely " shattered." A few days afterwards he presented himself before me, and I perceived at a glance that he was suffering under elephantiasis.

By a fortunate coincidence Dr. Boeck of Christiania celebrated in conjunction with Dr. Danielssen for his researches into the elephantiasis Græcorum, was at this time a visitor to London ; and I was glad of the opportunity of obtaining a corroboration of my diagnosis by so eminent an authority. Dr. Boeck recognized the nature of the case at once, and determined one symptom of the disease, namely, incipient anæsthesia, which I had myself overlooked.

This case is peculiarly instructive, and especially on account of its association with syphilis ; it is an evidence of the independence of the leprous poison and the syphilitic poison, and it illustrates powerfully the resemblance which exists in the constitutional manifestation of the two diseases. It is interesting also in its source ; the female with whom the patient cohabited in 1861, and from whom he received his first syphilitic infection, being a leper ; and it goes some way to fix the period of latency of the disease, namely, at about two years.

Let us review the leading symptoms, taking them in the order of time ; the first that showed itself was the outbreak of maculæ on the skin, then followed congestion of the mucous membrane of the fauces ; thirdly, neuralgic pains; fourthly, nervous prostration ; and fifthly, anæsthesia. The whole case it must be remembered is in its infancy, and an unusually favourable opportunity is offered us of observing the incipient symptoms of the disease and watching their progressive development. These circumstances must also be borne in mind in judging of the universal acceptation of the case as one of syphilis by the medical men under whose observation it came. My own opinion is that there was no combination of constitutional syphilis with the disease in chief, and that the symptoms above noted were from the first the ordinary symptoms of development of elephantiasis. And their resemblance to the constitutional symptoms of syphilis are, as we perceive, so close, that they must necessarily be taken for syphilis by every medical man who has not had the opportunity of separately observing and studying elephantiasis.

We must here remark that our patient had received a medical education and training in the hospitals of India, into which many native patients were received; but he assures me that he has never seen a case of elephantiasis; and that no suspicion had ever come into his mind until I pronounced my diagnosis, that the case was other than syphilis. This will explain the opinions of the numerous medical officers by whom he was examined in India, and it serves to prove that elephantiasis is not so widely distributed in India as we have been accustomed to believe. In the islands of the Indian Ocean, in Ceylon, in the Mauritius, in Madagascar, &c., we know the disease to be common; but it is not by any means so frequent in the interior of Hindostan.

Recurring to the symptoms of elephantiasis as manifested by the present case, it will be convenient to take them in the following order ; namely, the skin, the mucous membrane, the nervous system.

The remarkable swarthiness of the *skin* was very striking ; a photograph of a sister of the patient showed that the family tint of complexion was not deeper than is to be seen daily amongst ourselves ; and yet the colour of this young man was deeper than that of a native Indian. He had always been darker than his brothers and sisters, but the extreme swarthiness of his skin had only been developed during the last year or two. The swarthiness of colour was most remarkable on his lower limbs, beginning in the thigh and increasing in depth downwards to the foot. Moreover, the left foot was darker than the right; and the end of the great toes was somewhat bleached; showing a tendency to *leuce*, which, as well as *melas*, is a characteristic of elephantiasis Græcorum. The hands also were deeper in colour than the arms, and there was a certain leaden and metallic hue of the skin of the hands and also of the face.

The *maculæ* were dispersed chiefly on the forehead and on the trunk of the body, producing a mottling of the skin. They were circular in figure, of a size varying from a quarter of an inch to several inches in diameter, and of a reddish and yellowish brown colour, not strictly copper-coloured, of which the predominant tint is red, but having a duskier and more melasmic hue; they were in fact the representatives of the *melas* of vitiligo, of lepra, of the elephantiasis of the Greeks. Some of the smaller and more recent maculæ had a ruddy glow, marking their origin in erythematous congestion, while others of longer standing were more decidedly melasmic. A later period would probably be indicated by a total loss of colour, a true *leuce*, and its accompanying anæsthesia.

The next character evinced by the maculæ is a certain degree of thickening of the integument from infiltration. Several of the maculæ on the forehead were thickened to the extent of producing a slight

degree of prominence, but there were no tubercles. There was also some degree of thickening of the integument of the dorsum of the hand, and, wherever the maculæ were pinched up between the fingers, a thickening of the integument could be detected. In association with the thickening of the integument is a dilated state of the pores of the skin, which gives it a coarse appearance; and when the infiltration is carried a little further, and the maculæ become œdematous the elevated surface has a degree of semi-transparency that gives it a resemblance to the outer covering of brawn. Sometimes the dilated follicles exude a greasy secretion; at other times they are dry. The general surface of the skin of our patient was dry, more particularly the head and the lower extremities. When at my request he took a Turkish bath, he found that, although the trunk of the body perspired profusely, there was no moisture on the wrists and hands, and none upon the legs below the knees, the thighs perspired slightly. The non-perspiring regions of the body were those which were also the most remarkable for swarthiness. On the legs the pores were dry and prominent, filled with cuticular exuviæ, and there existed a slight desquamation of the epidermis in flakes.

The state of the skin in general is one of abnormal innervation and defective nutrition; abnormal innervation is shown in the tendency to erythematous congestion which is generally accompanied with a heightened sensibility of the skin; and the lowered sensibility which follows in the melasmic and especially in the leucosmic stage. Our patient complained of heat and tingling in the soles of the feet; while the legs above the ankle were shown by the needle, as used by Dr. Boeck, to be in a state bordering on anæsthesia. Defective nutrition of the skin was evinced by the suspension of perspiration on the legs and hands, by the dryness of the legs, by an unhealthy ulcer on the metatarso-phalangeal joint and also upon the heel of the left foot, and particularly by a loosening and casting of the nails of the feet. The root of the nail of both the great toes could be lifted from its bed, and the body of the nail was in course of separation from its matrix. The ulcers had arisen from pressure and friction of the boot during his march from Ferozepore to Cawnpore in March 1864, and, in consequence of deficient vitality, exhibited no disposition to heal.

The prominent blotches on the forehead gave a sombre character to his countenance; not as yet approaching the leonine expression of tubercular elephantiasis, but a heaviness that heightened the gloomy, listless, and melancholy expression of his face. There was no thickening of the lobes of the ear; and although he had lost a considerable quantity of the hair of his head it was still thick and abundant; and there was no loss of the eyebrows.

The mucous membrane very early participates in the surface congestion of the body; the conjunctiva in our patient soon became injected as did the mucous lining of the nares, the fauces, and the larynx. In advanced stages of the disease, the mucous membrane is apt to ulcerate; but at the early period of the present case the affection of the mucous membrane had not advanced beyond congestion. His appetite and digestion had remained good throughout, with the exception of the acute period of the attack which he experienced during the march to Cawnpore.

He remarks that he has a feeling of soreness in his nose; and the nostrils are always more or less stuffed. He has uneasy sensations in his palate which he compares to some object projecting into the cavity of the mouth; he has a similar sensation sometimes in the fauces with a sense of soreness extending to the ears and some degree of hoarseness of voice. He complains of having lost the vocal power of his larynx; before this illness he was a good singer with a powerful voice; now, he cannot utter a note. He also speaks of a feeling of dryness in the throat and of a fœted state of the breath; sometimes the odour of the breath has a sickly sweetness like almonds, and at other times is to his own appreciation excessively offensive. Dr. Morell Mackenzie examined the patient's throat with his laryngiscope and reported him to be "suffering from "slight chronic congestion and follicular disease "of the mucous membrane of the larynx, but with "nothing of a specific character about the affection."

The nervous sensibility of our patient, as is usual in elephantiasis, partakes of the double character of hyperæsthesia and anæsthesia, the former belonging to the period of invasion of a febrile attack or exacerbation; the latter to the decline of such an attack. While the mental powers of the patient are depressed and lethargic. Thus, while the soles of the feet were were hot and sensitive, the legs, as was first remarked by Dr. Boeck, were anæsthetic. At a later period the sensibility of the fingers and feet is reduced, and they are remarkable for their coldness. Our patient declared that he could pick up a small object like a needle or pin with his fingers; but on the following day he informed me that he had lost the power of his wrists and could not unfasten the straps of his portmanteau without great difficulty; he also complained of an inability to button the collar of his shirt.

The deep-seated pains which he referred to his bones were very little changed during the first two years of his illness. Since that period they have increased and other abnormal nervous sensations have been added. The original pains occupied the limbs, particularly the legs, the cartilages of the ribs, and the region of the sternum; but latterly he has complained of "a peculiar throbbing nervousness" of the whole body; a trembling nervousness sensation; and frequent attacks of palpitations. These nervous feelings destroy his sleep; and his flesh is so tender that the slightest pinch is productive of pain. A slight blow on the arm, vibrates painfully through his system like an electric shock. He has also suffered from pains in the loins and great general debility.

Case 12.—*Elephantiasis anæsthetica; mistaken for secondary syphilis; severe treatment with mercury and iodide of potassium; aggravation of the disease; apparent cure.*

A physician, aged 70, one of the chiefs of the Bengal medical establishment, resident in India for 40 years, having enjoyed remarkably good health with the exception of some mild attacks of hepatic disorder, was attacked with symptoms of anæsthetic leprosy in 1849, in the 67th year of his age. He states that in the summer of 1850, while in Malta, he became aware of an occasional weakness in walking and a benumbed sensation on the outer side of the right foot. Later in the year an erythematous blotch showed itself at the seat of the numbness, and, when moving the foot, was attended with a prickling sensation and a feeling of tightness as of a wire fastened around the part. In 1851 similar phenomena occurred in the left foot, and several erythematous spots appeared on the right leg. The spots were of a dusky red colour, rough and dry on the surface, tender to the touch, and accompanied by a feeling of tightness. A few months later the feet were very tender, the prickling sensation was more general, and the tightness on progression extended higher up the leg. While these changes were in progress he began to experience a sensation of numbness on the side of the metacarpo-phalangeal joint of the middle finger, and observed a patch of redness on the next joint. In the month of January of the following year there was an evident numbness of the little and ring finger of the right hand.

Up to this time he had not been troubled with any constitutional disorder, but about the middle of January 1852 he was seized with sickness of stomach, and a fortnight later with a smart attack of fever, accompanied with excessive sweating, the latter symptom sometimes coming on without being preceded by the usual hot stage. He was treated with quinine and the fever quickly gave way. At the end of

eight days he was well, but on the third day of the fever and during the hot stage, two large livid œdematous looking blotches, which he described as "blebs," suddenly made their appearance on the outer border of the left wrist. After the subsidence of this febrile attack the sensibility of the fingers gradually returned. In June he had a second attack of fever which lasted 11 days, being preceded by sickness; on the ninth day of the fever the numbness returned, but disappeared on the 11th day. In July there was a third febrile attack of the same kind accompanied with a burning sensation, pain, and soreness of the outer border of the feet, increased numbness of the ring and middle finger of the left hand, redness of the knuckles, pain on exposure to the slightest cold, and the development of a hard and inflamed swelling just above the inner condyle of each upper arm in the situation of the supracondyloidean lymphatic gland. During the month of August the disease continued steadily progressing; raised spots were thrown out on the face, erythematous spots and blotches appeared on the abdomen and limbs, being preceded by itching and smarting. In September there was a still further increase of the disease, the whole forehead was studded over with elevated spots, there were erythematous spots within the mouth, and hard tumours developed in the subcutaneous cellular tissue of the forearms and back of the wrists. The three following months of the year witnessed a progressive advance of the disease in every way, with increased insensibility and lividity of the fingers and feet.

In January 1853 numerous large blotches made their appearance on the back of the thighs, and several of those already in existence threw out a broad erythematous areola around their circumference, which gave them an annulated figure, dark and almost livid in the centre, and bounded by a crimson band. In April, after a hot bath of the temperature of 104°, the face was flushed and spotted over with erythematous blotches of a vivid red colour; the redness of the spots on other parts of the skin increased, and they became prominent from œdematous infiltration, while those which were already prominent were enlarged. The symptoms now assumed a progressive character. In the beginning of May there was inflammation of the left hand and œdema of the right ankle, with a sensation of extreme cold, although the part was hot to the touch. The face remained congested and swollen; the features were enlarged, and the natural wrinkles of the skin deepened; the alæ of the nose were remarkably distended, and hard knots could be perceived, as well as felt, under the skin at the outer angle of the eye, upon the temple, and upon the ears. Inflammation now appeared in the right hand, and the fingers became swollen and painful, like those of the left. The deranged sensations of cold and pain continued in the legs and feet; spots showed themselves on the palms of the hands, and the œdema, which had increased in the patches, was now apparent in the lower eyelids.

The preceding narrative of the case is drawn from a journal kept by the patient himself, and at the conclusion of this period, namely, in May 1853, he first came under my observation, his state being much aggravated and the disease accelerated, as he believed, by the treatment which he had pursued, and which consisted of arsenic in large doses for seven weeks, then iodide of potassium, at first alone, and subsequently with arsenic, for another term of seven weeks, then iodide of potassium, arsenic, and bichloride of mercury, all combined, for three weeks, until the gums became tender; next, the bichloride of mercury with sarsaparilla for seven weeks; and, lastly, two grains of blue-pill night and morning, to keep up tenderness of gums, in addition to the bichloride of mercury and sarsaparilla. It was after this severe course of treatment, extending, in time, from August 13th 1852 to April 20th 1853, that he first consulted me.

The history of the patient, while under my care, was one of a progressive advance of the disease, both in eruption and anæsthesia, until the month of August, when a state of extreme dulness, heaviness, and lethargy came on, accompanied with febrile symptoms, and continued for several weeks. From this attack he gradually recovered, and two months later had regained strength, appetite, and the power of applying his mind to reading. The œdematous spots and blotches on various parts of the body were becoming much smaller; many of the brown-coloured spots were fading; and there was a slight increase of power over the muscles of his hands and lower limbs. He could walk across the room with the aid of a servant, and had some feeling in his feet; but his hands were still very sensitive to the influence of cold, and he was obliged to continue the use of warm gloves to protect them.

The nephew of this gentleman, himself a physician, reporting the state of the patient's health, in March 1855, observes:—"By using the warm salt-water "bath, and residing some months on the sea-coast, "he so far regained the strength of his limbs that he "was able to walk a mile alone, and no appearance "of spots was visible, with the exception of a few "spots on the abdomen." The patient had no return of the symptoms of leprosy, but died a few years afterwards of ordinary bronchitis.

Case 13.—*Elephantiasis anæsthetica; insidious invasion and progress; absence of pains; anæsthesia; good general health.*

A fine healthy looking man, a merchant of the Mauritius, where he had resided twenty-nine years, became aware, at the age of forty-seven, of the presence of elephantiasis. There is reason to believe that the disease had already existed in a latent form, probably for some years, for his first notice of being affected was the discovery that his arm was insensible to the accidental aspersion of boiling water from the mouth of a tea kettle. His wife is a remarkably fine woman, a native of Mauritius, and with his children, five in number, enjoys perfect health.

His medical man reports that when he first saw the case there was a crop of small, round, tubercular elevations of a darkish red colour sprinkled over the arms and neck, and that subsequently the blotches increased in size and number and made their appearance on the trunk and face. His general health "both then and since remained unaffected," but as the disease resisted treatment and resembled in its manner of origin the leprosy of that country, it was thought desirable to send him to England, "where the disease with which he was menaced is unknown."

At his appearance before me the patient declared that he felt as strong as ever in his life, that he had no pains, and was not sensible of any inconvenience of any kind beyond the appearance of the prominent blotches, and a knowledge of the presence in his system of a serious disease. His face presented a not unhealthy-looking reddish brown tint, his hands and feet were deeply bronzed, and there was an obvious insensibility of the skin of the hands and arms.

Case 14.—*Elephantiasis tuberculosa and anæsthetica combined; loss of voice; disease of bones; distortion of joints; death after ten years.*

The elder brother of the young gentleman, whose state is described in Case 2, was attacked with elephantiasis at the age of thirteen and died at twenty-three, the duration of the disease being ten years. The exanthem was first noticed on the face in the form of spots, the features were pale and bloated, the eyebrows fell off, he had no whiskers or beard, and he subsequently lost the hair from the pubes, the nails also broke away from their matrices and were not reproduced.

The mucous membrane of the nares was severely affected, mordid secretions accumulated on its surface, the nasal bones and cartilages gave way and the nose became flattened. His voice was weak and hoarse, he had difficulty in making himself heard, and was

troubled with an occasional cough. His appetite also was defective.

He had ulcers on various parts of the skin and had lost a phalanx from the little finger of one of his hands, the rest of the fingers were bent in different directions and the hands distorted. He was unable to use his hands and was incapable of walking.

His spirits were excessively dejected, he was subject to fits of despondency, and suffered severely from neuralgic pains.

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ARMY SANITARY COMMITTEE.

REPORT

ON

THE LATE EPIDEMIC

OF

SCARLET FEVER AMONG CHILDREN

IN

ALDERSHOT CAMP.

Presented to both Houses of Parliament by Command of Her Majesty.

LONDON:
PRINTED BY GEORGE EDWARD EYRE AND WILLIAM SPOTTISWOODE,
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PLAN OF ALDERSHOT CAMP

SHEWING THE

HUTS, BARRACK-ROOMS AND MARRIED-QUARTERS IN WHICH THERE WERE CASES OF SCARLET FEVER

(The first 37 Huts and Quarters attacked, including in all fifty-five cases of Scarlet Fever, and the order in which the attacks succeeded each other are marked in Red Figures the dates of attack are given in Table 8.)

North Camp

South Camp

ALDERSHOT COMMON

Aldershot

(The first 37 Huts and Quarters attacked, including in all fiftyfive cases of Scarlet Fever, and the order in which the attacks succeeded each other are marked in Red Figures the dates of attack are given in Table 8.)

ALDERSHOT COMMON

Aldershot

North Camp

South Camp

Infantry Barracks

West Cavalry Barracks

East Cavalry Barracks

South Cavalry Barracks

Artillery Barracks

Royal Engineers' Workshops

Royal Engineer Train Stables

Military Train Establishment

Barrack Stores

Stables Royal Artillery & Military Train

Officers' Club

Royal Pavilion

Prince Consorts Library

Garrison Library

Theatre

Church

Iron Church Camp

Hospital Canteen

Female Hospital

Workshops

Thornhill Pond Military Store Depot

Filtering Works

Magazine

Guard Ho

Parade

Cricket Ground

Recreation Ground

Peaked Hill

Round Hill

Thorn Hill

Stanton Hill

Sandhurst Hill

Cemetery

New Town

Brick Field

North Farm

Park House Farm

Sheeling farm

Queens Head

Holly Hill farm

Deadbrook Pond

Gravel Pit

Sand Pit

Claycart Hill

Rush Moor Flash

Claycart Flash

Bats Hog Style (Roman Intrenchment)

Scrogg's Bottom

Timber Yard

Farnham Wharf

Farnham Wharf Br.

Pontoon Br.

Wooden Br.

Basingstoke Canal

Blackwater River

Smallshot

Aldershot Br.

Gold Bottom

Thornhill Hollow

Tumulus

Sunny Hill

Green Harts Hill

Cambers Copse

West End Farm

Anger Copse

Rock Place

Old Brickkiln

Pavilion Hotel

Police Barracks

Albert Villa

Albert Hotel

Lord Campbell

West Surrey Bank

Haylock Ho.

White Hart

Wesleyan Chapel

Indian Heroes

Nursery

The Nursery

Vine Cottage

Fovers Place

Brigadier Generals Quarters

Claycart Hill Bottom

Scale Twelve Inches to One Statute Mile - 2280

10 Chains 0 10 20 80 Yards 20 0 40

30 120 40 Chains 160 Perches 1/2 Mile

Zincographed at the Ordnance Survey Office Southampton Col Sir Henry James R.E. F.R.S. &c Director

1866

Scale Twelve Inches to One Statute Mile - 2280

1000 Feet 400 0 1000 2000 2640 Feet

1 Furlong 0 1/2 Mile

2.

ARMY SANITARY COMMITTEE.

REPORT

ON

THE LATE EPIDEMIC OF SCARLET FEVER AMONG CHILDREN IN ALDERSHOT CAMP.

To the Right Honourable the Marquis of Hartington, M.P., Secretary of State for War, &c., &c.

In conformity with our instructions we have made inquiry into the circumstances connected with the late epidemic of scarlet fever at Aldershot, and beg now to report the results.

From the very commencement of our inquiry it became evident that this epidemic, taking place, as it did, among well defined groups of children and under conditions most of which could be easily ascertained, would afford an opportunity rarely occurring of attempting to trace the history of scarlet fever in its progress through a given population. For this reason, while inquiring into any causes which might have added to the intensity of the disease, we at the same time directed our attention to various other points connected with its origin; the manner in which it attacked affected huts and quarters, and the degree of intensity with which the disease showed itself under different conditions.

In order to accomplish the ends we had in view it was necessary that a laborious statistical inquiry should be carried out, embracing not only the facts connected with the disease from the time we began the inquiry, but extending back as far as past records would enable us to obtain information. It was necessary even to make inquiry in regiments which had left camp, in order to gather together a class of facts which would otherwise have been lost. We have in this way collected a considerable amount of information of much interest and importance, for obtaining which our acknowledgments are due to the principal medical officer of the camp, Inspector-General Dr. Jameson as well as to other medical officers who have interested themselves in the work.

Two of the members of the Committee likewise visited the camp on two separate occasions to confer with medical officers and to examine on the spot the conditions under which scarlet fever existed at the time.

In discussing the facts we have ascertained, we shall in the first place give the statistics of the epidemic in Aldershot Camp and in the surrounding districts; the extent of the disease in different arms of the service and the localities specially affected. We shall next discuss the manner in which the disease diffused itself over the camp, including the history of second and successive attacks in the same huts and quarters, and the intervals of time between these attacks; we shall give also a short account of an epidemic of measles which broke out while scarlet fever was progressing; then we shall show in what class of accommodation scarlet fever was most severe, and the circumstances which appeared to have added to its intensity, including the sanitary state of huts and quarters; and we shall conclude this Report with a few practical suggestions for improving the health of children in camp.

Statistics of scarlet fever.

The camp at Aldershot was first occupied by troops in May 1855. The strength in that month was 1,537, from which number it was gradually increased month by month until it exceeded 11,000 in the month of December of the same year. There is no record to show the number of women and children attached to this force, nor is there any available information, until the opening of the female hospital three years later, regarding the extent and nature of the diseases from which they suffered. We have therefore not been able to ascertain the date at which scarlet fever first appeared among children in camp, but this disease existed there at a very early period, for in the month of July 1855, the third month from the formation of the camp, there were two admissions from scarlet fever from among the troops. In the month of August there were six admissions from this disease. There was one case in September, there was one in October, and two cases in December, making 12 attacks of scarlet fever among the troops within a few months of their being sent to Aldershot.

During the first 12 months after the camp was occupied there were 43 admissions for scarlet fever among the troops, none of which proved fatal. There can be little doubt that scarlet fever existed at the same time in soldiers' families in camp if there were any children there at these dates.

The earliest statistical records regarding women and children commence in 1859. We can ascertain from them the average numbers in camp, but the records of disease are imperfect, as they include only cases treated in the female hospital, and not cases treated in huts or quarters.

We are hence unable to arrive at an accurate knowledge of the state of health of soldiers' families, and of the precise amount of disease existing among them. Assuming, however, that the hospital records contain the more severe and important cases, and bearing in mind that cases of scarlet fever were the most likely cases to be sent to hospital for treatment, we have been able to obtain a considerable amount of statistical information which throws much light on the sanitary state of the camp and on the causes which have led to the recent prevalence of epidemic diseases there.

Table 1. The first statistical return, that for 1859,[1] shows that the average strength of children in camp was 1,509. From amongst these there were six cases of scarlet fever admitted to the female hospital, of which two proved fatal.

In 1860 the average strength of children had increased to 1,670, and there were 11 admissions, and one death from scarlet fever.

In 1861 the average number of children had fallen to 1,494, but the scarlet fever cases had increased to 29, and three of the cases proved fatal.

In 1862 there was a still further reduction in numbers to 1,314, but the admissions from scarlet fever rose to 46, and the deaths to eight.

In 1863 there were 1,507 children in camp, among whom there occurred 20 cases, and two deaths from scarlet fever.

[2] Table 2. Up to this period the disease had not taken on the epidemic character, and the statistical records[2] which we have received date the appearance of the epidemic from the 23rd October 1863, on which date a solitary case occurred, there having been no known case in camp during the preceding two months. On November the 27th there was another case. There were two cases on the 3rd December. The next case appeared on the 15th February 1864. The average number of children in camp was 1,762 during this latter year. There was a case on the 19th March, and another on the 13th April. None of the cases proved fatal. There is reason to believe that these were not the only cases, and that other slight cases were treated in huts and quarters, from not being considered of sufficient importance to be sent to hospital.

The real increase of the disease occurred in the month of May 1864. During nine days of this month there were 17 cases and two deaths. On four of the days there was one case per day. On two of the days there were two cases per day, and on three of the days there were three cases per day.

[3] Table 3. It is of importance to remark here that during the first four months of the five years for which we have records, namely 1860 to 1864,[3] there were only 11 cases and one death from scarlet fever, while during the last eight months of the same five years there were 277 cases and 41 deaths. The proportion of attacks during the last eight months of these years as compared with those of the first four months of the same years was as 12 to one, and the proportion of deaths as 20 to one.

It hence appears that, so far as concerns scarlet fever, the last eight months of the year are the most dangerous, at least at ordinary times.

As already stated, the deaths during the month of May 1864 were two in number and the hospital cases 17. In the month of June there were ten cases and two deaths in seven days; on three days there were two attacks per day. In July there were 21 cases and six deaths occurring in 13 days. On eight days there was only one attack per day. On three days two attacks per day. On one day there were three and on another day four attacks.

Thirty-five cases of scarlet fever occurred on 15 days in August, but on only four days of the 15 was there one attack per day, on the other 11 days the cases numbered two, three, four, and five a day. There were nine deaths during the month; on two days there were two deaths per day.

There were 22 attacks and five deaths in 11 days in September; mostly two, three, and four cases a day. On the 4th of this month there were three deaths.

In October there were 23 cases and seven deaths. In November 13 cases and two deaths. There were 21 cases and three deaths in December. One day of this month produced four cases and another five cases of the disease.

The early months of 1865 showed a remarkable departure from the apparent law of exemption of these months from scarlet fever, as brought out by the experience of five previous years.

There was no abatement, but, on the contrary, the disease continued its course as if to mark more conclusively its exceptional and epidemic character.

January	1865, afforded	22	cases and	5	deaths.
February	,, ,,	16	,,	6	,,
March	,, ,,	14	,,	2	,,
April	,, ,,	32	,,	8	,,

Making in all for these four earlier months 84 cases and 21 deaths, which may be compared with the total number of 11 cases and one death due to the same four months of the years 1860-1, 2, 3, and 4. In other words, the attacks were above thirty-eightfold more numerous in 1865 than the annual average for the same months during the preceding five years, and the deaths were as 105 to 1.

The maximum number of attacks in 1865 occurred in the month of May, during which there were 59 cases of this disease on 27 days, the highest number being eight cases on one day. There were five deaths during the month. In June there were 21 cases and only one death. The epidemic was declining, and we closed our inquiry on the 30th of the month.

We shall resume in a few words the statistical result of this epidemic attack.

In 1863 there were four cases and no deaths during October, November, and December of that year.

In 1864 there were 165 cases and 36 deaths. During the six earlier months of 1865 there were 164 cases and 27 deaths.

There were thus during the period included in the returns of the epidemic 333 cases and 63 deaths from scarlet fever.

Of these numbers there were among adult men 18 cases and 2 deaths.

Among adult women 15 cases and no deaths.

Among children 300 cases and 61 deaths.

Statistics of measles.

While scarlet fever was progressing in camp during the early part of 1865, another epidemic disease, measles, appeared under somewhat singular circumstances and engrafted itself on the scarlet fever.

It was stated that measles first appeared in the camp among children of a depot (85th regiment) which had arrived from a locality were this disease did not exist, and who did not bring it with them. They came into a district were scarlet fever prevailed. Two children of the regiment were attacked with scarlet fever in the first week of December, 1864; and two months afterwards, there having been no other scarlet fever cases among them in the interval, measles broke out among the children and finally extended over the camp.

The new disease so modified the existing scarlet fever epidemic, or was so modified by it, that it was difficult to tell the one disease from the other. Sometimes indeed they were thought to co-exist in the same subject, or to succeed each other. At last measles appeared to merge into scarlet fever, and almost disappeared from the returns.

The early attacks of measles were very fatal.

The first recorded case was on the 2nd February 1865.[1] Another case occurred on the 13th, and two others on the 16th and 18th. On the 17th there were three cases and one death. On the 19th two cases and two deaths. On the 27th and 28th there were on each day one case and one death; making in all 11 cases and six deaths for the month. In March there were 12 cases and one death. In April there were 54 cases and two deaths. On the 22nd of this month there were nine attacks. In May there were 21 cases and no deaths, and in June 16 cases and no deaths.

[1] Table 4.

Up to the 30th June there had been in all 114 cases of measles, of which nine had proved fatal.

The mortality from measles during the time of its prevalence in camp appears to have been entirely confined to soldiers' children. The total deaths from this disease in the registration districts of Farnborough and Farnham in which the camp is situated amounted to 11 for the first six months of 1865. They all took place after measles had broken out in camp. Nine of these deaths are known to have occurred in soldiers' families, and it is very probable that the other two deaths may have been overlooked or that they may have occurred in children of civilian parents living in camp, and may not have been reported to the principal medical officer.

In Farnborough district, which includes the North Camp, there were no deaths from measles registered.

Comparison with the civil population.

We next proceeded to make inquiry as to the degree of prevalence of scarlet fever in the district of country in which the camp is situated. We applied to the Registrar General for the statistics of mortality and also for the estimated population in the two registration districts of Farnborough and Farnham, which include and surround the camp on all sides, and the result of the information we have obtained is as follows [1]:—

[1] Table 5.

The census returns for Farnborough and Farnham include the military in camp; and the registered deaths in the two districts contain also the deaths occurring in camp.

The following table gives the estimated population for both districts at the middle of each year, corresponding to the returns obtained for soldiers' families, and also the deaths from scarlet fever.

FARNBOROUGH AND FARNHAM.

Years.	Population.	Deaths from Scarlet Fever.
1859	42,308	9
1860	43,828	11
1861	45,435	13
1862	47,134	22
1863	48,929	28
1864	50,828	118

This table shows a considerable prevalence of scarlet fever in the country, but as both the population and deaths include the military, it is necessary to deduct the camp population and also the camp mortality from these numbers in order to ascertain the civil mortality.

The shortest way of arriving at the result will be to take the population under 15 years as representing the ages at which scarlet fever prevailed.

In the census year 1861, the average population of Farnborough and Farnham under 15 years of age, including those in camp, was 12,160.[2]

[2] Table 6.

The average strength of children in camp (assuming all to be children who are under 15 years of age) was 1,494[3] in the same year. The numbers have varied somewhat from year to year.

[3] Table 1.

If we assume the civil population under 15 outside the camp as tolerably constant, and as being represented by the difference between the total census population under that age, and the number of children in camp in the census year, we shall have 10,666 on which to calculate the civil mortality. From these data we obtain the following results, showing the comparative mortality outside and inside the camp from scarlet fever:—

Years.	Scarlet Fever. Deaths. —	Scarlet Fever Deaths. —	Approximate Rates of Mortality from Scarlet Fever per 1,000 per annum.	
	Farnborough and Farnham.	Aldershot Camp.	Farnborough and Farnham.	Aldershot Camp.
1859	7	2	0·65	1·3
1860	10	1	0·93	0·6
1861	10	3	0·93	2·00
1862	14	8	1·3	5·4
1863	26	2	2·4	1·3
1864	90	35	8.4	23·4

Assuming these data to be approximately correct they prove that scarlet fever even in its epidemic form has by no means been confined to the camp, but that it has extended its ravages over the whole district of country. The latest return we have received from the Registrar General shows that during the six months January 1st to June 30th 1865[4] there were 91 deaths from scarlet fever in the same districts. Of these deaths 26 occurred among children in camp, leaving 65 among the civil population outside. By reducing the facts to the same general expression applied to the previous data, we find that during the first six months of 1865 the mortality from scarlet fever among young persons of the civil population outside the camp was in the annual ratio of 6 per 1,000 per annum, and among similar ages within the camp the mortality was in the ratio of under 15 per 1,000 per annum. This comparison of course shows no more than that among the same number of population within the camp* about five deaths from scarlet fever took place during the six earlier months of 1865 for every two deaths which occurred among the civil population outside.

[4] Table 6.

* The number used in this calculation is 1,762 children, the nearest estimate in our possession.

The results of the statistics are not favourable to the camp. They show that when an epidemic influence prevails over the whole country within which the camp is placed, young persons living within the camp are far more exposed to danger than the same ages outside. This has unquestionably been the experience of the late epidemic.

Aldershot Camp is placed in one of the healthiest districts of England. The average mortality for all ages including the deaths in camp is only 16·2 per 1,000, and nevertheless in so favourable a country and with the supervision and prompt medical attendance available in the camp there is this large amount of sickness and mortality from epidemic diseases among the young.

Arms of the service affected.

Scarlet fever appears to have attacked the children of all the corps in camp.[1]

There were seven cases and four deaths among the Royal Engineers, besides 10 cases of measles, one fatal.

[1] Table 7.

The Royal Artillery and Royal Horse Artillery yielded 64 cases and 19 deaths from scarlet fever, and 13 cases of measles. Four scarlet fever cases and two deaths occurred among men, and one woman was affected. No adults suffered from measles.

Among cavalry regiments there were 43 cases and nine deaths from scarlet fever. Two cases occurred among men, and four among women. There were besides two cases of measles.

Fourteen infantry regiments or parts of regiments were affected; besides others whose corps is not stated. Among these regiments there occurred 180 cases and 23 deaths. 12 privates and 6 women were affected, but none of them died. The deaths from scarlet fever were all among children. There were besides 67 cases and eight deaths from measles in these regiments. No adults were attacked with measles. The deaths from measles were all among children. In one regiment, the 85th, there were 24 cases of measles and seven deaths.

In the Military Train there were 23 cases and three deaths from scarlet fever, besides six cases of measles. None of these cases happened in adults of the corps.

There were three cases and three deaths from scarlet fever in non-commissioned officers' quarters of the Army Hospital Corps. Besides one case of measles.

Localities where the epidemic occurred.

The next point in the inquiry was to ascertain where the disease had occurred. We have been able to obtain the precise localities of the cases, and we shall give the general result of this investigation.*

The accommodation provided for soldiers' families is scattered all over the camp, and is of the following description:—

Various classes of accommodation for officers, non-commissioned officers, &c.

Wooden huts in the North and South Camps.

Barrack-rooms in permanent barracks.

Permanent married quarters.

The cases and deaths in each class of accommodation have been as follow:†—

1. *Officers' Quarters.*—14 cases of scarlet fever and three deaths; also 16 cases of measles.[2]

[2] Table 10.

2. *Non-commissioned Officers' Quarters.*—14 cases and three deaths from scarlet fever, and two cases of measles.[3]

[3] Table 10.

3. *Wooden Huts, North Camp.*[4]—The average number of children in the lines of the North Camp was 296. There were 29 huts affected, which yielded 35 cases and 10 deaths from scarlet fever, besides two cases of measles. In this camp five cases of scarlet fever, but no case of measles happened in adults. There were 30 cases and 10 deaths from scarlet fever among children. In two huts there were cases of measles only.

[4] Tables 11 and 12.

4. *Wooden Huts, South Camp.*[5]—The number of children in the South Camp averaged 767. Sixty-three huts in this camp were affected with scarlet fever or measles, In 49 scarlet fever huts there were 96 cases, and 16 deaths from scarlet fever. There were besides 43 cases and eight deaths from measles partly in huts affected with scarlet fever. In 14 huts there were cases of measles alone. Two cases of scarlet fever happened among adults in the South Camp. There were 94 cases and 16 deaths from scarlet fever among children. No adults were attacked with measles.

[5] Tables 13 and 14.

5. *Permanent Barrack* rooms, used mostly as married quarters.[6] Barrack rooms were occupied as married quarters in the cavalry, artillery, and infantry barracks. They contained 216 children. Cases of scarlet fever occurred in 46 rooms in permanent

[6] Table 15.

* Table 8 gives the localities of all the cases.

† The number of children in each class of accommodation for 1864 are given in Table 9.

barracks. The total number of cases in these rooms was 76, and the deaths 21, There were also 31 cases and one death from measles in rooms of this class. Ten rooms which escaped scarlet fever yielded cases of measles among their occupants.

On analysing the returns it appears that 13 of the rooms affected with scarlet fever yielded cases ten in number among men and six among women. Two of the cases among men proved fatal. Deducting the cases and rooms in which only men were affected from the total number, it would appear that 38 barrack rooms more or less occupied by married people and children were affected, and that 60 cases and 19 deaths from scarlet fever took place among children in them. All the cases of measles were among children.

[1] Table 16.

6. *Permanent Married Quarters.*[1]—There were 483 children in permanent married quarters of the cavalry, artillery, and infantry. Scarlet fever broke out in 37 rooms. There were 48 cases and seven deaths, all among children, besides a case in a woman. There were 10 rooms attacked by measles only, in which there were 11 cases, but no deaths from measles.

[2] Tables 17 and 18.

Scarlet fever and measles also occurred in other classes of accommodation in various parts of the camp.[2]

Three canteens were attacked and yielded six cases of scarlet fever; one case in a woman.

In two schools there was one case of measles in each, but no scarlet fever.

In one telegraph hut there occurred one case of scarlet fever, and two cases of measles.

The sick in four hospitals were attacked under the following circumstances:—In the large hospital called the "Union," one case of scarlet fever occurred in a man under treatment for another disease. In the woman's hospital there were three cases and one death. The fatal case happened in a child. There was one case in the child's hospital on January 19, 1865, and one case in a soldier under treatment for *ulcus* in the hospital, V. lines, South Camp.

In the following Abstract we have given the total results of this part of the inquiry:—

Nature of Accommodation.	Number of Rooms or Huts, &c. attacked with			Totals.	Scarlet Fever.		Measles.		Remarks.
	Scarlet Fever only.	Scarlet Fever and Measles.	Measles only.		Cases.	Deaths.	Cases.	Deaths	
Men's huts, North Camp -	27	..	2	29	35	10	2	..	
Men's huts, South Camp -	40	9	14	63	96	16	43	8	
Permanent barrack rooms -	39	7	10	56*	76	21	31	1	
Permanent married quarters -	37	..	10	47	49	7	11	..	* Most of these rooms were used temporarily as married quarters.
Officers' quarters - - -	5	..	6	11	14	3	16	..	
Non-commissioned Officers' qurtrs.	4	1	1	6	14	3	2	..	
Miscellaneous - - - -	14	2	3	19	18	1	6	..	
	166	19	46	231	302	61	111	9	
Camps (families tented out) -	4	..	1	5	19	1	1	..	
Hospitals - - - - -	4	..	..	4	6	1	..	..	
Canteens - - - - -	3	..	..	3	6	..	..	..	
Schools - - - - -	..	..	2	2	..	..	2	..	
Totals - - -	177	19	49	245	333	63	114	9	

A large number of families were removed from infected huts and quarters and tented out in the period from the 5th May to the 18th August 1865. The average number of children under canvas during this time was 308. Among these there occurred 19 cases and one death from scarlet fever, besides one case of measles, from May 5th to June 30th 1865, and from June 30th to the breaking up of the camp on August 18th there were three cases and one death. In $3\frac{1}{2}$ months there were thus 22 cases and two deaths among 308 children under canvas. Most of the attacks appear to have taken place shortly after the families were moved out of huts and rooms where the disease existed.

For reasons already stated we have not been able to obtain a perfectly accurate list of all the cases which have occurred in different classes of accommodation so as to deduce the true death rate to cases. If we suppose, however, that cases similar in character were received into hospital from huts and permanent buildings used as married quarters, and if we assume the cases and deaths among *children* (excluding adults), as the true

measure of the sanitary state of each class of quarters, we arrive at the following ratios of attacks and deaths :—

Class of Accommodation.	Number of Children.	Scarlet Fever among Children.		Ratio per 1,000 of Children.		Died per 1,000 of Children attacked.
		Cases.	Deaths.	Attacked.	Died.	
Huts, North Camp - - -	296	30	10	101·	34·	336·
Huts, South Camp - - -	767	94	16	122·	20·8	170·
Barrack rooms - - - -	216	60	19	270·	88·	316·
Permanent married quarters -	483	48	7	99·3	14·3	146·

The numbers in this table are too small to enable any general conclusion to be drawn from them, but we must admit the facts as they stand, and in doing so we learn from them that during the late epidemic the proportion of attacks and deaths from scarlet fever among children in the different classes of married quarters varied to a very remarkable extent.

In permanent barrack rooms used as married quarters 27 per cent. of the children were attacked, and 8·8 per cent. died. Taking the huts of the North and South Camps together, we find that $11\frac{1}{2}$ per cent. of children in them were attacked, and that the deaths were somewhat under $2\frac{1}{2}$ per cent. In the permanent married quarters the attacks were under 10 per cent. and the deaths 1·4 per cent. of the children.

The period when families were camped out does not admit of statistical comparison with the periods in the preceding table. It may be stated, however, that during the time the camps were occupied the ratio of attacks calculated on the average number of children was 7 per cent. and the mortality a little more than 0·6 per cent.

The per-centage of deaths to cases treated was highest among cases brought from the North Camp; it was less in cases from barrack rooms, and still less in cases from permanent married quarters and from huts in the South Camp. The deaths to cases was lowest of all in tents.

The facts taken simply as they stand lead to the following conclusion, viz. :—

That among separate groups of children under 15 years of age, of precisely the same classes, differing only in the locality where they dwelt and in the character of their acccommodation, scarlet fever showed itself with very different degrees of intensity and fatality.

We shall state afterwards the sanitary conditions under which these various groups of children were placed.

These, then, are the more important facts in regard to locality bearing on the history of this epidemic, and we now proceed to inquire in what manner the disease appeared and diffused itself over the camp.

Diffusion of the disease.

The information which we have been able to obtain on this important part of the inquiry is tolerably complete, but it has been obtained with much greater labour than could have been anticipated. This has partly arisen from the removal of regiments, the limited nature of the records regarding soldiers' families which have been hitherto available, and the difficulty of tracing the history of early epidemic cases, unless the inquiry is undertaken at the time they occur. The same difficulty has always existed with regard to the early history of all epidemics, and it has been too much the practice in times past to supplement the deficiency of trustworthy observations by assuming some special hypothesis or manner of propagation to which all the apparent facts may be referred as a final solution of the difficulty. We shall endeavour to avoid this by resting as much as possible on the circumstances of the case, stating simply what has occurred and the obvious deductions following from the events.

The first fact of importance is one already mentioned, namely, that scarlet fever has existed in the camp from its earliest occupation. We have thus before us the remarkable fact, that on an elevated healthy district of country, the bringing together of a number of human beings for the first time under the same roof with limited cubic space and deficient ventilation consequent thereon, has been followed by attacks of this disease.

The next important fact is one stated by several medical officers, and which has doubtless been intimately connected with the severity of the attacks, and that is, the constitutional state of children who have suffered. It appears from the evidence laid before us, that weak, languid, scrofulous constitutions have been specially liable to the disease, and that in cases under treatment scarlet fever has shown an adynamic character, and has been attended with cerebral and other complications, sloughing, &c., in fatal

cases. These events are by no means unusual; they frequently occur during severe epidemics. Wherever weakened and scrofulous constitutions are found in the majority of cases attacked, or at all events in the fatal cases, the fact indicates the pre-existence of causes tending to lower the general standard of health of the population which suffers.

In pursuing the inquiry we ascertained the precise huts or rooms where the cases occurred, with the dates of attack, in order to discover whether the disease propagated itself in any defined manner. We have thrown the results as regards the first 55 cases into a table given in the Appendix, from which the following facts are abstracted.*

The first recognized case of the late epidemic took place in the centre block of the infantry barracks, on the 23rd Oct. 1863. This block, as will afterwards be seen, was one of the special seats of the disease. The second case took place on the 27th November, about five weeks afterwards, in a hut in M. lines, South Camp, at a distance of 1,800 feet from the first. On December the 3rd two attacks occurred simultaneously in a hut in F. lines in the South Camp, 750 feet from the second case.

There was then a lull in the disease until the 15th Feb. 1864, when a case appeared in a barrack room over a stable in the east block cavalry barracks 3,000 feet distant from the case immediately preceding it in date. The next case occurred in H. lines, North Camp, on 19th March, at a distance of 8,000 feet from the former one.

No. 6 troop room, over a stable in the cavalry barracks, was attacked on April 13th. This case was 10,000 feet distant from the one immediately preceding it.

All these cases happened at considerable intervals of time, and no additional cases are known to have happened in any of the rooms until long after.

In the month of May 1864 the attacks became more numerous, and followed closer on each other. On May 2nd a case occurred in the South Camp 7,580 feet distant from the case of April 13th; on the 4th May three children were attacked simultaneously, and on the 6th another attack took place in the same hut in R. lines, South Camp. This hut was 1,300 feet distant from that in which the case occurred on May 2nd.

The disease next appeared at a distance of 5,500 feet from the hut in R. lines, and struck the cavalry married quarters, No. 16 room, on May 12th. Three days afterwards, on the 15th May, a case occurred in No. 10 room in the same building, and on the same day there was a case in a cavalry troop room, 600 feet distant from the others; on the 18th a second case occurred in No. 16 room. The next case was in a cavalry troop room 500 feet away, on the 20th of May; on the same day two other cases appeared, one in a hut in the South Camp 5,500 feet away from the last case, and another in an officer's mess kitchen 150 feet from the last-mentioned hut. Three days afterwards, on the 24th May, there were three simultaneous attacks, one in a hut in R. lines, South Camp, one in a cottage of the Royal Engineers, and one in permanent married quarters. These three simultaneous cases occurred at distances of 7,500 feet and 5,600 feet from each other. In the months of June and July, during which the remainder of the 55 first cases occurred, there was exhibited the same tendency to attack points at long distances from each other; 2,000 feet, 4,000 feet, up to 6,600, 7,000, and upwards of 8,000 feet were the usual distances. If the fatal cases be taken as a test of distance, we find the same rule to hold. The two first fatal cases on the 12th and 20th May occurred in children taken from rooms in the cavalry barracks 1,000 feet from each other. The next fatal case was on the 21st June from X. lines, South Camp, 6,250 feet distant. The next death took place in a hut in R. lines 450 feet distant on the 23rd. A fatal case occurred early in July in 6 troop room, S. cavalry barracks, 6,500 feet away, and so with the others.

These facts go to show that this epidemic followed the usual law of epidemic diseases, that is, it began by unconnected scattered cases occurring at considerable distances from each other, and at considerable intervals of time, and that it did not spread from fixed centres to surrounding huts or rooms.

Second and third attacks.

A very important branch of the inquiry relates to the occurrence of second and third attacks in the same patient, and in the same huts or rooms.

In the first place we have positive evidence that in several instances children were admitted to hospital with second attacks of scarlet fever.

On examining the facts relating to simultaneous and consecutive cases in huts, we find that in the 55 early cases already referred to, they stand as follow[1]:—

[1] *Vide* Table 19.

* Table 8. This table also gives the localities of all the cases, together with the distances between the first 55 cases and the number of occupants of affected rooms or huts. The principal data have been transferred to the accompanying map.

In 37 hut, F. lines, South Camp, two cases occurred simultaneously on December 3rd 1863. In an officer's hut in R. lines, South Camp, three cases occurred simultaneously on May 4th, 1864; another case took place in the same quarter on the 6th.

In No. 16 room of the cavalry married quarters one case occurred on May 12th and one on May 18th.

In No. 2 hut, X. lines, South Camp, the first case appeared on 21st May 1864; the second on June 30th; a third case followed on July 7th. In No. 3 hut, X. lines, South Camp, there was a case on June 21st and another on July 7th.

In field officers' quarters, R. lines, South Camp, a case occurred on the 23rd June and another on the 1st July.

In No. 2 officers' hut, S. lines, South Camp, the first case occurred on June 24th, the second on July 7th.

In No. 20 hut, L. lines, North Camp, a case appeared on the 3rd July and another on the 5th.

In No. 22 hut, R. lines, South Camp, there were three cases, one on the 8th July, another on the 23rd, and another on the 29th.

These 55 earlier cases occurred in 37 huts, quarters, or rooms.

In 27 rooms out of 37 there was one attack per room.

In one case there were two attacks and in another three attacks on the same day.

In one instance the second case followed the first at the interval of a day.

In two instances the interval was two days.

In two instances the interval was six, in one seven; in one instance eight; in one 13; in one 15; in one 16, and in one 40 days.

We have been enabled to follow out this inquiry to nearly all the affected quarters in the camp, and we shall state the facts as regards the number of attacks per room, and also the intervals of time between the attacks.

In the North and South Camps there were 76 huts attacked with scarlet fever, and in these huts there occurred 131 cases, and 26 deaths (including those among men).

In 52 of the 76 huts there was only one case per hut, and one death in each of 12 huts (12 deaths in all).

In 11 huts there were two cases per hut and four deaths, two in one hut and one in each of two other huts.

In six huts there were three cases per hut and four deaths (one in each of four huts).

In two huts there were four cases per hut and one death.

In one hut there were five cases, none of which proved fatal.

In two huts there were six cases in each, and two deaths in each.

In two huts there were seven cases in each and only one death.

The corresponding results as regards permanent buildings—Barracks, married and other quarters—were as follows:—

Total rooms of all classes affected with scarlet fever, 109; cases, 171; deaths, 35. Of these 109 rooms, 75 had one case per room, and one death in each of ten rooms (ten deaths in all).

In 24 rooms there were two cases per room, in four of these rooms there were two deaths in each, and in four rooms, one death in each. In four rooms there were three cases per room, with five deaths, one in each of two rooms, and three in another room.

In three rooms there were four cases in each, and two deaths, one in each of two rooms.

In one room there were five cases and two deaths, in another room there were seven cases and no deaths; and in another room there were 12 cases and three deaths.

The permanent married quarters, which afford only one rather small room per family, had 37 rooms affected, in which there were 49 cases and seven deaths.

In 25 of the rooms there was one case per room, and one death in each of two rooms. But 12 rooms had each two cases per room. In one of these rooms there were two deaths and there was a death in each of three other rooms.

Taking all classes of accommodation together, we find that in 185 affected rooms, huts, and quarters, there were 302 cases and 61 deaths.

That 127 rooms had only one case each and 23 deaths in all, and that there were 58 rooms with more than one case per room, and 38 deaths among them.*

Intervals of time between consecutive cases.

As regard the intervals of time between attacks, we find that in 14 huts or rooms there were two simultaneous attacks on the same day. That in six instances there were three simultaneous attacks the same day, and that in three instances four cases per hut occurred the same day. There were 23 huts or rooms therefore in which the multiple attacks in each hut were simultaneous, and the total number of cases occurring in this way was 58[1].

[1] Table 21.

* Table 20 gives the facts in detail.

Tables 22 and 23.

Where intervals between the attacks in the same hut or room of a day or more occurred they were in the following proportions :— [1]

In 8	examples the interval was	1 day		In 4	examples the interval was	18 and 19 days
„ 7	„ „	2 days		„ 3	„ „	20, 24, and 25 days
„ 6	„ „	3 „		„ 2	„ „	4 weeks
„ 4	„ „	4 „		„ 2	„ „	5 „
„ 7	„ „	5 and 6 days		„ 1	„ „	6 „
„ 4	„ „	7 days		„ 1	„ „	7 „
„ 7	„ „	8 to 11 days		„ 1	„ „	8 „
„ 4	„ „	12 days		„ 2	„ „	3 and 4 months
„ 7	„ „	13 to 16 days.				

In 8 instances the intervals between succeeding cases varied from four to 6, 8, and 13 months. Out of all the attacks recorded, there were only 49 or 50 in which the interval between first and second, or second and third attacks in the same hut or room was under a fortnight.

Vide Table 2.

A few examples of the order of succession of attacks in individual huts and rooms will serve further to illustrate this part of the subject.[2]

In 31 hut, H. lines, North Camp, there were two cases of scarlet fever, the first on October 17th, 1864, the second on January 13th, 1865, giving an interval between the attacks of 88 days.

There were two attacks in No. 20 hut, L. lines, North Camp; the first was on the third, the second on the 5th July 1864. Interval two days.

In 22 hut, N. lines, South Camp, where there were two cases, the first occurred on June 21st, 1864; the second on July 11th. Interval 20 days.

There were two attacks in No. 4 hut, E. lines, South Camp, both on the same day, November 13th, 1864. Two attacks took place in No. 10 hut, E. lines, one on the 6th, the other on the 21st September 1864. Interval 15 days.

The experience obtained in huts, where the cases were so numerous as almost to constitute distinct endemic attacks, was as follows :—

In 40 hut, M. lines, North Camp, there were three cases, the first on November 20th, 1864, the second on the 23rd, the third on December 5th. The successive intervals were three and 12 days.

No. 12 hut, E. lines, South Camp, yielded seven cases, the first on September 4th, 1864; next day, the 5th, there were three simultaneous cases. On the 6th there was another case. There were no more cases till October 9th, when a case appeared after a cessation of 33 days. The last case in this hut took place on the 13th October, four days later.

In No. 20 hut, E. lines, South Camp, there were in all six cases. On August 30th, 1864 there were three simultaneous attacks in this hut. The next case was on September 2nd, after an interval of three days; the next case on the 4th September, interval two days; the last case was on October 31st, the interval being 57 days.

In 31 hut, R. lines, South Camp, on May 24th, 1865, four cases of scarlet fever occurred simultaneously; next day, the 25th, there were two cases; next day, the 26th, there was one case, and the disease ceased.

In 5 hut, X. lines, South Camp, there were six cases, the first on June 30th, 1864, the second on April 27th, 1865, nearly 10 months after. On May 8th, 1865, 11 days after the previous case, there were two simultaneous attacks; seven days later, on the 15th, there was another case; and six days later, on the 21st May, the last case occurred.

Hut No. 21, Y. lines, South Camp, had five cases. On December 12th, 1864, there were four simultaneous attacks, and there was no other case, till January 5th, 1865, when the last case occurred, after an interval of 24 days.

We shall afterwards show that in permanent buildings the disease attacked the inmates at irregular intervals of time and distance, as it did in huts.

fected alities d intervals tween acks of asles.

The outbreak of measles followed a somewhat similar law, modified, however, by the fact that this disease fastened itself, in the first instance, specially on the children of the 85th regiment, among whom it first appeared.

Families belonging to this regiment were quartered in the South Camp, in huts in G. H. M. and S. lines. On the 4th December 1864 a child of the 85th was attacked with scarlet fever in 21 hut, M. lines. A second child was attacked with scarlet fever in 23 hut, G. lines, on the 7th December, and there were no more epidemic cases in the regiment until February 2nd, 1865, on which date the first case of measles took place in No. 13 hut in M. lines.[3] There was no other case in this hut. The next case in succession occurred in No. 18 hut on February 13th. This hut stands in another row, distant

Vide Table

about 100 feet from No. 13. It is important to remark that a private soldier of the 85th regiment had been seized with scarlet fever in this same hut on February 6th, that is, seven days before the measles showed itself. The third case of measles appeared on the 16th February in No. 15 hut, M. lines, which is the hut next to No. 13. The disease then struck S. lines. In No. 5 hut (distant 1,700 feet from No. 15 in M. lines) there were three simultaneous attaeks on the 17th February in children of the 85th. One of these proved fatal. Two days later, on the 19th, other two simultaneous attacks, both attended by fatal results, occurred in the same hut (No. 5).

On the preceding day a fatal case occurred in No. 16 hut, M. lines (the hut next to No. 18, and opposite to No. 15, both of which had been affected). Five days earlier, on the 13th, there had been a fatal case of scarlet fever in the same hut, in a child of the same regiment, the 85th.

The next cases occurred in No. 19 hut, M. lines, one on the 27th, the other on the 28th February, in children of the 85th, both fatal. A hut and pathway lie between this hut and the nearest huts previously affected.

The first case of measles which showed itself out of the 85th regiment took place on the 11th March in a child belonging to the 44th regiment living in hut 21, H. lines, at a distance of 780 and 2,480 feet from the huts in M. and S. lines, to which the disease had been previously confined. But there were children of the 85th regiment in this same hut, one of which had been attacked with measles on the 3rd March, a week before, of which it died. Two other cases occurred in this same hut in children of the 85th on the 21st and 22nd March. On the 18th a case occurred in a child of the 85th at Government House, New Town, in another neighbourhood altogether, 4,400 feet away from S. lines.

On the same day, March 22nd, on which measles occurred in the hut in H. lines, it broke out in the 1/14th regiment in the east infantry barracks, 1,340 feet distant. On the 27th it appeared in the artillery barracks, about 1,800 feet from the infantry barracks. After this date the disease appeared in various and distant parts of the camp; several times it attacked lines as well as huts. For instance, on April 3rd two cases appeared in huts Nos. 3 and 7, in O. lines, and in the latter hut a second case, a fatal one, took place next day. On the 5th two other cases occurred in No. 7 hut.

On the 15th April it attacked huts 9 and 12 in E. lines, and No. 3 hut, F. lines, South Camp. In hut 9 there were two simultaneous cases.

In the North Camp one hut in C. lines and one in I. lines, only, yielded each a case.

In the South Camp there were cases of measles in 15 lines, and 23 huts were attacked.

Blocks of permanent barracks and married quarters were attacked somewhat similarly.

There was no case in the cavalry barrack rooms.

There were 9 cases in three rooms of the permanent artillery barrack.

In the permanent infantry barracks 14 rooms afforded 22 cases.

There were 18 cases in eight quarters belonging to officers and non-commissioned officers.

There were 11 cases of measles in 10 rooms in permanent married quarters.

Table 25 gives the total rooms and huts affected with measles in all classes of accommodation. It will be seen that out of 67 affected quarters there were in 12 instances two successive cases in the same hut or room.

In five huts or rooms there were three consecutive cases, in four four, in two five, and in one hut there were six consecutive cases.

Table 26 shows the relative proportions of single and simultaneous attacks of the disease. In eight huts or rooms there were in each two cases, in two huts there were three cases, and in one hut four cases on the same day.

Tables 27 and 28 show the intervals of time which elapsed between attacks in the same hut or room yielding more than one case. In seven such instances the interval between the first, second, and subsequent attacks was a day, in six it was two days; in two four days, in one five days, three eight days, in one 10 days. In one instance the interval was 21 days, in another 22 days.

In 19 huts or rooms which yielded 35 cases of measles there had been scarlet fever previously.

In 46 rooms yielding 76 cases of measles there had been no scarlet fever.

It will be seen from what has been stated in regard to measles that, with the exception in the 85th regiment, already stated, this disease afforded a considerable proportion of simultaneous seizures in the same hut or room. That in 24 instances there were consecutive attacks in the same hut or room, and that in 19 of these the interval was eight days, and under. Moreover, out of 65 huts and rooms attacked with measles there were 43 or 66 per cent. of the whole, which yielded no more than a single case each among the children in them.

Summary of facts.

The facts in regard to both epidemics may be resumed briefly as follows :—

The severity of scarlet fever has been influenced by season.

Children of weak and scrofulous constitutions have been the chief sufferers.

The last scarlet fever attack was the fifth of which we have records, but it was epidemic in character. Like other epidemics it began by scattered cases unconnected with each other, and occurring at considerable intervals of time and distance.

The disease appeared in 185 huts, rooms, and quarters, in which there were 302 cases and 61 deaths. In 127 rooms, 68 per cent. of the whole number attacked, there was one case per room, so that 42 per cent. of the cases were single cases.

In eight huts or rooms with more cases than one in each, the first and only attacks were simultaneous, and consisted of two cases per room (16 cases in all). In one hut the only attack consisted of three simultaneous cases, and in another hut of four simultaneous cases.

Hence in 137 rooms out of 185 (74 per cent. of the total affected rooms) there were no consecutive cases.

Table 29 shows that there were 16 rooms in which the first attacks consisted of more cases than one, and that 41 cases happened in this way ; this number deducted from 175 cases (the number which took place in rooms with more cases than one) leaves 134 cases only in which the question of intervals of time between the attacks enters into the discussion as to the manner of propagation of the disease.

In very few scarlet fever attacks was the interval between cases occurring in the same room of such duration as to admit of being included in what is called the incubative stage of the disease, that is, the interval between the presumed reception of the infection and its manifestation by distinct symptoms.

The third, fourth, and fifth days are usually assigned as this period. Presuming that all cases were usually removed to hospital as soon as the disease showed itself, the number of second attacks included within the incubative days scarcely exceeded a dozen.

As regards measles, we have just seen that 66 per cent. of the quarters attacked yielded a single case each, that in nine rooms there were simultaneous attacks affording 26 cases, and that there were only 24 instances in which there were consecutive attacks at various intervals of time.

Infection.

In the course of our inquiry we endeavoured to ascertain to what extent scarlet fever might have been propagated by communication from person to person, and the following facts bearing on the subject were brought to our notice.

Inspector General Dr. Jameson, who as principal medical officer at Aldershot examined carefully all the circumstances of the earlier cases of the disease, states that although scarlet fever " is one of the very few diseases which all authorities allow to possess the " curious property of self-dissemination," " the fact of importation could not be distinctly " proved," and he mentions several instances of exceptional attacks under conditions very favourable to the propagation of the disease by infection which nevertheless did not take place.

In M. lines, South Camp, hut No. 19, occurred the second case of the disease given in the returns. The hut was occupied by 16 persons, including children, yet this was the only case in the hut. The family had been above a year in camp. The distance of this hut from the infantry barrack room, where the first case appeared, was 1,800 feet. The next two cases occurred simultaneously in the family of a barrack serjeant, eight in number, in a hut 750 feet away from the former case. This hut he had taken possession of after it had been empty nearly a year.

In No. 1 cavalry barrack room, occupied by 16 men, a private soldier was attacked. This was the only case in the room.

In No. 32 troop room there were 14 inhabitants and eight children. A child was seized and died, and no one else suffered. It was the only case in the room.

We shall next notice the experience of the female hospital.

Until March 1st, 1865, scarlet fever cases were admitted into the female hospital, which consists of several adjacent huts connected together by corridors. Part of the accommodation was allotted to puerperal cases, part to fever cases, and part to others. Each hut used for fever cases had 6,072 cubic feet of contents. Eight patients were allotted to each hut ; one bed was occupied by the nurse, and on an average there were three mothers resident with their sick children, making 12 inmates per hut with 506 cubic feet each. But the numbers constantly varied, the wards were cleared out, the cases being transferred from ward to ward for the sake of change and purification.

Neither the cubic space allowed nor the construction of the hospital were of such a nature as to be favourable to the sanitary state of the building.

We have obtained the following facts regarding the hospital through the kindness of the medical attendant, Dr. Barry.

In the first place it appears that no nurse nor mother was affected.

Dr. Barry informs us that an infant, nine months old, in the female hospital with its consumptive mother, and which had been admitted for chronic catarrh on March 18, 1865, was removed for scarlet fever to the special hospital on the 27th A boy two years and four months old, in hospital for scrofulous disease from May 13, 1865, was transferred for scarlet fever to the special hospital on the 22nd May.

After March 1st, when the special hospital was opened, there were no scarlet fever cases, and indeed no case of fever of any kind treated in the female hospital, consequently there were none at these dates.*

A third doubtful case took place in a woman, but Dr. Barry states that the patient did not receive scarlet fever in the hospital.

Certain circumstances which took place in Dr. Barry's own family, living in the Camp, deserve notice. Up to the time when a special hospital for scarlet fever cases was established on March 1st, 1865, Dr. Barry attended all the scarlet fever cases in hospital as well as cases elsewhere for the ten months preceding the occurrence we are about to relate. He visited cases in hospital three times a day for weeks together, going backward and forward to his own house, and neither he himself nor his family nor anyone he visited were affected.

On February 11th, 1865, while scarlet fever prevailed in the camp, an outbreak of the disease occurred in his family in a child, and cases occurred among his children and servants on the 15th, 17th, 21st, 22nd, and 26th. One of the children died. A lady, who had been one of the patients affected with scarlet fever, was seized with small pox on March 12th, and on April 2nd and 8th, two of the servants were seized with scarlet fever, and next day another servant showed symptoms of continued fever. One of the children which lived with other sick children and servants was unaffected. Every one in the hut except Dr. Barry and one child suffered.

We have noticed this case in detail because it belongs to a class of cases which are supposed to prove the mediate transmission of scarlet fever. On the other hand it is right to recall the fact that out of 10 epidemic cases occurring during the two scarlet fever outbreaks in Dr. Barry's family, one case was of small pox following scarlet fever, and another case was continued fever following scarlet fever, facts which appear to indicate the operation of some more general epidemic cause, prevailing over the whole district.

Dr. Barry himself says that he can give no information as to the manner of introduction of the disease into his family; that he has no reason to suppose that he ever conveyed infection to any family he attended; that there was no crowding in the hospital at the time; and that the ventilation was excellent. But he states that his hut was too small, and that his family had outgrown its capabilities. The hut had no water-closets or suitable domestic conveniences. There was considerable overcrowding and other defects.

While scarlet fever cases were treated in the female hopital, mothers and other relatives were admitted to see the patients and to go backwards and forwards, yet in no instance was disease known to be communicated in this way.

After the special hospital for scarlet fever cases was opened, mothers were allowed to remain with and suckle children ill of the disease. This hospital was well ventilated and there was plenty of space for sick. In no case was it found that scarlet fever spread beyond the sick either to mothers or to other attendants.

In the spring of the present year it was considered desirable by the authorities to try whether it might not be possible to check the spread of the disease by removing all cases at once to this hospital, and by establishing a cordon round the hospital, so that no communication either direct or indirect should take place between sick children in hospital and those in camp. The result, however, was not satisfactory, for besides giving rise to complaints, the attacks were not diminished in number.

We find that during the three months, April, May, and June, 1865, when the seclusion of sick was rigidly kept up, there were 112 new cases admitted, of which 14 proved fatal,

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* We may state here a fact bearing on this subject from our Report on the Scarlet Fever in Chatham Female Hospital.

In the general ward of that hospital, where the patients have above 1,400 cubic feet each, with abundant light and ventilation, all classes of cases were admitted. On May 20th, 1865, scarlet fever cases were admitted with the others, and were treated until July 7th, when they were removed out of the hospital on account of suspected communication of the disease to a puerperal patient in another ward. During this period the inmates of the general ward averaged five women and 10 children; seven out of the 10 children were scarlet fever cases; but nevertheless no woman or child treated in the ward for other diseases became affected with scarlet fever.

while during the three months, January, February, and March, when there was no cordon and when the communication was free, there were 52 cases and 13 deaths.

It was at one time considered possible that the disease might be spread by the intermingling of children in the schools, and the schools were closed, but without result. The number of attacks was not diminished by this measure. The schools themselves yielded only two cases of measles during the entire epidemic, neither of which proved fatal, but no case of scarlet fever.

Circumstances affecting the progress of the disease.

We shall next proceed to consider whether any additional light can be thrown on the history and progress of this disease by other circumstances.

Influence of season.

The first important fact is the one already mentioned, namely, that season has had some relation to the frequency of attacks. We have already stated that the occurrence of numerous cases in the early months of the year 1865, was an exception to the past history of scarlet fever in the camp. The large increase in the summer months was, however, in strict conformity with past experience.

Character of the accommodation where the disease appeared.

The next most important point is that which relates to the character of the quarters specially affected by the disease.

We have already discussed generally the character of the accommodation occupied by soldiers' families. This accommodation is scattered over the camp, and as a general rule is placed as near as possible to the barrack accommodation of the corps to which the families belong.

Part of it, as already shown, is in the lines of the North and South Camps. Part of it is in barrack rooms of various classes of permanent barracks, and part of it in permanent married quarters.

The lines of the North and South Camps are formed of groups of huts arranged in parellelograms side by side. The huts are 20 feet apart at the sides and ends. A broad space of 250 feet separates the lines along their sides, and the distance between the ends of each group is 90 feet. The two main rows of huts consist each of 12 huts, and there are two half rows behind them together with the officers' quarters, mess accommodation, &c. Each group or lines is lettered with one of the letters of the alphabet, and the huts are numbered. Each of the "lines" is intended for a battalion of 500 men with officers.

The lines of the North Camp occupy the highest level of the ground, and there is a gentle slope for drainage on both sides.

The lines of the South Camp are all on a slope, and there is a fall of 100 feet from the highest to the lowest side of this camp in the space of half a mile. In this camp the huts have been erected across the natural fall of the drainage, and the lower part of the ground which is skirted by the canal had never been thoroughly drained. As a general rule the huts in this camp which have had the largest number of cases are situated between the contour lines of 325 and 275 feet and under.

The huts are constructed of wood tarred outside, and are all the same size. They are 40 feet long and 21 feet wide, outside measurement. They have sloping roofs covered with felt; two windows on each side and ventilators at the ridge. The superficial area of the floor is 760 feet, and the cubic contents 5,818 feet. Each hut is constructed to hold 22 men, giving about 34½ square feet and 264½ cubic feet per man. A number of huts in certain lines are set apart for married quarters, while the men's huts in other lines were at the time of the epidemic wholly occupied by families. Four or five families are placed in each hut. Sometimes the families are separated from each other simply by curtains, but lately many of the married huts have been divided into four compartments by cross wooden partitions. Each compartment has its own door, window, and fireplace. Its area is 175 square feet and 1,358 cubic feet; this is the amount of space allowed for a man, his wife, and several children, with beds, tables, utensils, &c. The huts with curtains are set apart for five families.

All the huts are floored with deal laid on joists, but the floors are not sufficiently raised above the ground level, and in some instances the earth is dug out under the floor so as to leave a cavity below the level of the ground outside.

The following tables give the letters of the lines affected in both camps; the number of huts specially set apart for married soldiers (not including the usual serjeants' quarters belonging to the lines): the number of huts of all classes where scarlet fever or measles appeared, together with the number of cases and deaths from scarlet fever and measles in them. By multiplying the number of huts occupied by married people by four the approximate number of families in each of the lines can be ascertained.

North Camp. — Lines.	Number of Huts specially occupied as Married Soldiers' Quarters.	Number of Huts affected.	Scarlet Fever.		Measles.	
			Cases.	Deaths.	Cases.	Deaths.
A. - -	..	3	3	2	..	..
B. - -	..	2	3	..	..	..
C. - -	24	3	5	1	1	..
D. - -	16	3	3	1	..	..
H. - -	24	4	5	3	..	..
I.	..	1	..	..	1	..
K. -	..	1	1	1	..	..
L. -	..	3	4	..	..	..
M.	..	4	6	1	..	..
O.	24	5	5	1	..	..
	..	29	35	10	2	..

This table shows that the epidemic was disseminated pretty equally over the North Camp, notwithstanding the great difference in the number of families in the different lines. In 10 of the lines 29 huts were attacked, and they yielded 35 cases of scarlet fever and 10 deaths. Measles scarcely touched this camp.

The progress of scarlet fever and measles in the South Camp showed a somewhat different result, as will be seen from the following table :—

South Camp. — Lines.	Number of Huts specially occupied as Married Soldiers' Quarters.	Number of Huts affected.	Scarlet Fever.		Measles.	
			Cases.	Deaths.	Cases.	Deaths.
A. - -	..	2	1	..	1	..
B. - -	..	1	1	..	..	..
D. - -	..	1	..	..	2	..
E. - -	24	11	29	6	3	..
F. - -	24	2	2	..	3	..
G. - -	..	5	4	..	2	..
H. - -	..	4	3	..	5	1
I. - -	2	1	..	..	2	..
K. - -	5	2	1	..	2	..
L. - -	24	2	1	..	3	..
M. - -	24	8	6	1	6	3
N. - -	partially	4	7	2	..	..
O. - -	8	5	6	3	6	1
Q. - -	partially	2	1	..	1	..
R. - -	8	4	12	1	..	..
S. - -	..	2	2	..	5	3
W. - -	4	..	..	..	..	..
X. - -	14	3	12	3	1	..
Y. - -	partially	3	8	..	..	..
Z. - -	..	1	..	..	1	..
Totals -	..	63	96	16	43	8

It will be seen, that although these diseases appeared in nearly every one of the lines in the South Camp, scarlet fever was more intense in some lines than in others. It not only attacked a larger number of huts, but the proportion of cases per hut varied considerably. But at the same time its intensity was not in proportion to the number of huts in each "lines" occupied by soldiers' families.

In one hut in X. lines, in which there were 15 inmates, including seven children, six of the children were attacked and two died. The disease lingered about certain huts and returned to others, after having apparently disappeared. In some lines two or three contiguous huts were attacked, while in others the two or three huts consecutively affected were at considerable distances from each other, sometimes at opposite extremities of the lines. Again, the intervals of time between consecutive attacks in the same lines varied greatly, from a day or two, up to several weeks or months. In several instances the cases came so close on each other as to constitute endemic attacks. The most striking instance of this occurred in E. lines, South Camp, in which 29 cases and six deaths took place between August 25th, 1864 and January 19th, 1865; most of them before the end of October 1864. Other lines had a single case per month, or the attacks were even at longer intervals of time.

In order to ascertain how far local conditions might have modified the course of the disease in particular lines we had a special examination made into the sanitary relations of affected huts.

As already stated, those huts which chiefly suffered were at the lower end of the slope of the South Camp. The facts in regard to this point in the history of this scarlet fever epidemic are remarkable and merit special notice. We obtained the elevations of the men's huts in the South Camp, and by classifying these huts in groups, each of which is included within contour lines of known altitude, and by comparing the proportions of affected huts, of cases, and of deaths of each group we obtain the following results :—

Contour Lines.	Number of Men's Huts.	Huts attacked.		Cases.		Deaths.	
		Number.	Per Cent. of Total Huts.	Number.	Per Cent. to Total Huts.	Number.	Per Cent. to Total Huts.
Above 325 feet - -	106	7	6·6	7	6·6	..	0·36
325 to 300 feet - -	167	12	7·2	16	9·0	1	
Below 300 feet - -	300	30	10·0	72	24·0	15	5·00

This table shows that of 573 men's huts in the South Camp, 49 were attacked with scarlet fever and yielded 95 cases and 16 deaths.

Of 106 men's huts situated at elevations above the contour line of 325 feet, 7 or 6·6 per cent. were attacked, and yielded seven cases of scarlet fever, being in the ratio of 6·6 per cent. of the total huts above the line.

In the space between the contours of 325 and 300 feet there are 167 huts, of which 12 or 7·2 per cent. were attacked, and yielded 16 cases or 9 per cent. of the total huts, but there was only one fatal case.

Below the contour line of 300 feet there are 300 men's huts, of which 30 were attacked, or 10 per cent. of the total number. Under this contour there were 72 cases (equal to 24 per cent. of the total huts) and 15 deaths. All the fatal cases except one took place below the 300 feet contour. The proportion of fatal cases to huts below this contour when compared with the fatal cases to huts above the line were as 14 to 1, and of attacks as three to one.

Although these results would be to a certain extent modified by the number of children in each lines, we felt assured that there must be some local reason for this great disparity in proportions, and suspecting some fault in the subsoil from the gravitation of water from the higher levels and want of drainage, we requested an examination of the ground to be made in the lines most severely affected. Trial holes were dug in the following lines of South Camp, O. N. S. R. and X., and the officer of Royal Engineers who superintended the examination reported that holes two feet and a half deep showed a very damp substratum of clay under the superficial porous strata, retaining water and moisture under the huts close to the surface.

The subsoil of this part of the camp had not been drained. One of the trial holes was sunk in the ground close to the hut where the six cases had occurred.

E. lines, South Camp, where, as already stated, there were 11 huts affected, 10 of which yielded 29 cases and six deaths from scarlet fever, are all below the 300 feet contour. We have been informed that the ground close to E. lines was formerly swampy, and the lines now occupy a low, damp, and unfavourable position. This indeed was very much the case with the lines yielding the largest number of attacks. Dampness of subsoil and want of drainage existed along all the lower levels, and the evil has no doubt been increased by the canal which bounds the lower level of the South Camp throughout its whole extent, cutting across the natural outfall for the drainage. The ground under the lines of the higher levels, where there were few cases of the disease, is self-draining.

We had the floors of several affected huts taken up for the purpose of examining the subsoil. The timbers were sound, but as they were laid on the earth without ventilation beneath them, there was no means of getting rid of the damp air. In one hut (near the new hospital) in which several fatal cases had occurred, the ground beneath was very damp and hollowed out below the level of the ground outside. In the others we examined, the surface of the soil was apparently dry, but again the trial holes made outside showed a wet or damp subsoil close beneath the mere surface.

Subsequent examinations made by the Commanding Royal Engineer and reported on June 5th, 1865, showed that the ground beneath the huts in cases where the boarding had been taken up, presented similar appearances to those in the examples we personally examined.

We are inclined to attribute much of the higher intensity of the disease in certain huts and lines to this condition of the subsoil.

We cannot overlook the fact also that Aldershot is like any other camp in its sanitary relations. All camps are liable to deteriorate in their healthiness by lapse of time and constant use. The usual remedy for this is of course shifting ground, a measure impracticable with hut camps.

The huts are all old and decaying, and the cubic space and means of ventilation were very deficient at the time we inspected them.

Wooden huts if well ventilated and otherwise in a good sanitary condition may be safely occupied if the present regulation space of 400 cubic feet per occupant be given. But, as already stated, the amount of space per man falls far short of this allowance. The crowding both in the huts of single men and in married huts was excessive. In some of the divided huts the space per adult and child was scarcely 200 cubic feet.

The huts were originally constructed with overlapping boards, which afford a ready means of renewing the air when combined with ridge ventilation. Ridge ventilators are provided throughout, but in many cases they had been to a great extent closed up. The hut walls have besides been rendered impervious to air by tarring them, and the huts we examined, where scarlet fever had appeared, were most carefully lined inside with paper purposely to exclude the outer air.

Besides the damp state of the subsoil, there were these additional elements of overcrowding and deficient supply of fresh air in operation. The long use of the huts has also led to saturation of the woodwork with organized matter proceeding from the breath and bodies of the inmates.*

We examined several rooms in the permanent barracks, and also several of the permanent married quarters where cases of scarlet fever had occurred. The conditions presented by this class of accommodation differed of course materially from those existing in camp huts.

The permanent barracks are built in a hollow, with higher ground sloping towards them round a considerable part of their circumference. The facilities for free external movement of the air are hence not so great as could be desired for buildings containing a large population with a comparatively small amount of space.

On looking over the camp and permanent barracks from the highest ground it was not difficult to decide where epidemic disease was likely to exist, from the levels alone.

The barracks of each arm have blocks or ranges of married quarters attached to them. They are two floors in height, and are divided into separate houses having passages and staircases common to eight quarters.

The extent of this class of accommodation is too limited. The families have only one small room each.

The rooms are 11 feet long by 10 feet broad, affording only 110 square feet for a whole family. They vary in height from 10 feet to 11 feet. The cubic contents may be taken at from 1,100 to 1,200 feet. When so limited an area comes to be occupied by a man, his wife, and several children, with beds and other articles of furniture, the space falls far short of that required for health. The rooms we inspected where the disease had been were moreover built back to back, that is, there were two rooms in the depth of the house separated by a dead wall.

The rooms have some means of ventilation, but the space is so small that, including articles of furniture, the crowding of these rooms, especially at night when the family is in bed, must be excessive. In one instance which we saw, the bed with the furniture and the inmates *standing* nearly covered the whole area of the floor.

In such cases mere proximity is injurious to health, and anything like sufficient ventilation is scarcely possible.

Half the rooms are besides on the ground floor, and in this respect they differ little from camp huts, while their local position with respect to neighbouring higher ground is not more favourable.

Barrack rooms occupied as married quarters vary in dimensions. The infantry barrack rooms are 50 feet 9 inches long, 22 feet wide, and 12 feet high. The windows are at opposite ends. The cavalry barrack rooms are 39 feet 8 inches long, 30 feet wide, and 10 feet 6 inches high. Those of the Royal Artillery are 44 feet by 28 feet and 10 feet 6 inches high.

Large barrack rooms of this class occupied by several families including many children are amongst the most unfavourable of all married quarters, so far as concerns health. Many cases of scarlet fever occurred in these rooms. The rooms where the disease was most severe are long and narrow, and have windows or doors only at the opposite ends. The ventilation in all the rooms we examined was insufficient, besides which the mere breathing of a common atmosphere at night in rooms of this description by a large number of persons, especially by young children, who are most susceptible subjects, would of itself be unsafe during an epidemic season. One of the barrack rooms in which the children suffered most severely had one of its windows close to the latrines of the whole barrack block.

In endeavouring to estimate the influence of these unfavourable local conditions on

* Table 30 shows the general arrangement, cubic contents, and superficial area of hut quarters.

the intensity of disease, we attempted to trace the course of scarlet fever in different blocks of buildings, as well as in lines and groups of huts, but similar difficulties have been found in doing so in both classes of accommodation.

Some of the facts, however, which we have obtained are worthy of record.

We have already alluded to the circumstance that the centre block, permanent infantry barracks, was one of the special seats of scarlet fever; but this, no doubt, partly arose from the number of families which were accommodated in this double block of building.

No fewer than 16 rooms in this central barrack were affected, and there occurred in them 30 cases and seven deaths from scarlet fever, besides cases of measles.

Thirteen of the affected rooms had only one case in each, and there were three deaths among these 13 cases.

In one room there were two cases and no death.

In one room there were three cases and one death.

In one room, No. 31, there were altogether 12 cases and three deaths.

The most severely attacked room, No. 31, was the room first attacked in the block. The earliest case in it occurred on November 23rd, 1864. The second case, which proved fatal, took place on December 12th, after an interval of 19 days. The next case was on the 28th December, interval 16 days. Two days afterwards, on the 30th, there was another case. There were three cases and one death on January 1st, 1865; there were three cases on the 11th, one on the 18th, and a fatal case on the 30th January, with which the attacks in room 31 ended. From November 23rd, 1864, to January 30th, 1865, room 31 was the main seat of the disease in the centre barrack; but there were cases in two other rooms within the period. On December 30th, 1864, three cases, one of which was fatal, occurred in No. 30 room, and there was one case in room No. 39, on January 26th, 1865.

During 92 days, from February 1st to June 2nd, 1865, when the last case in this block took place, there were 14 cases and two deaths scattered over the block, one case per room, except one room, which yielded two cases and no death. The other rooms had each a case at irregular intervals of time, and there was one death in them.

Scarlet fever existed in this centre barrack for nine months.

During part of the time measles co-existed with scarlet fever in the same buildings.

As additional illustrations of the course of the disease in particular barrack rooms occupied as married quarters, we may instance No. 6 troop room, South cavalry barracks, which yielded two cases. The first case in this room took place on April 13th, 1864, the other case on March 29th, 1865. No. 6 troop room, West cavalry barracks, yielded four cases and one death. The first case took place on August 18th, 1864. The second case was on the 6th September. There was a fatal case on the 18th September. The fourth and last case followed on November 29th.

As permanent married quarters are more regularly occupied by families than are barrack rooms used as married quarters, they afford, perhaps, better opportunities of ascertaining the course which scarlet fever takes in blocks of buildings where there are children.

Scarlet fever cases occurred in the married quarters of the Royal Artillery, cavalry, and infantry. In the Royal Artillery block there were 10 cases and two deaths in seven rooms; one room furnishing two cases and one death, both on the same day. Four other rooms furnished one case each. Three rooms had thus each two attacks of the disease. The dates of attacks were 28th July, 19th August, 14th and 21st November 1864; 21st, 23rd, and 24th January, and 21st February 1865.

There were 10 rooms attacked in the cavalry married quarters, yielding 14 cases and four deaths. Six rooms furnished a case each and one death. Four rooms furnished two cases each and three deaths; one room had two fatal cases. The dates of attack were 12th, 15th, 18th, and 24th May, June 25th, 14th and 27th October, 2nd and 27th December 1864; 20th and 28th February, 2nd March, and 7th April 1865.

The course followed by scarlet fever in permanent buildings appears to have been very similar to the manner of succession of cases in huts; children were seized at very irregular intervals of time and distance. The attacks appear to have followed no general law, except that, the disease being in the district of country, it may be supposed to have taken the most susceptible subjects during the time being. One thing however, is certain, viz., that wherever it appeared defective sanitary conditions co-existed with it and favoured its attacks.

In addition to the more general defects in and around these various classes of married accommodation which we have already mentioned, the general sanitary state of huts and rooms themselves was far from being satisfactory in the instances we examined. Generally there was a want of lime washing and purification. The clothes washing of the family appeared to be done in the living and sleeping room, for in several instances we found vessels full of water and wet clothes in the one small apartment occupied by the family.

The comparative sanitary state of different groups of quarters affected with scarlet fever may be summed up in a few words.

1. Camp huts have the great advantage of subdividing the population with free air spaces between the groups; they also admit of free ventilation; but as at present allotted there are too many families in a hut. In this manner the subdivision is imperfect on account of a certain community of foul air throughout the huts by chinks in the partitions. There has also been at Aldershot great overcrowding of huts, defective ventilation, want of drainage, and damp subsoil,

2. Permanent married quarters afford a much better class of accommodation. But in this case also the form of construction in houses with back-to-back rooms, passages and stairs in common to eight rooms occupied by eight separate families, together with the small size of the rooms and their overcrowded state, have all acted more or less as countervailing disadvantages.

3. Married accommodation provided by placing a number of families in one large barrack room is the most disadvantageous of any for health.

These rooms are deficient in the great element, so important during epidemics, of subdivision of families, so that a number of adults and children are compelled to breathe a common stagnant atmosphere. The ventilation is deficient, and the whole construction unadapted for family occupation.

4. Open camps, at least during suitable weather, can be made perfectly healthy for a time. Cubic space is necessarily limited in tents, but on the other hand there is subdivision to any necessary extent, and abundant means of ventilation.

The general course of the epidemic has indicated that the nature of the accommodation we have described and its relations to health have exercised a most important influence on the intensity of the disease.

This conclusion is further supported by the fact that the children in camp have yielded a very high death rate from all causes. The following abstract of a table prepared by Inspector-General Dr. Jameson, is sufficient to establish this point.*

Total Annual Deaths per 1,000 among Children in Camp.	
Year.	Year.
1859 — 31·41	1862 — 35·76
1860 — 26·94	1863 — 27·20
1861 — 49·53	1864 — 43·70

A comparison of these very high death rates with the general death rate of 23·9 per 1,000 among children under 15 years of age which ruled in Farnborough and Farnham districts (including the deaths in camp) during the years 1851—1861, is sufficient evidence of the low condition of health in which the soldiers' children have hitherto been. Epidemic scarlet fever simply took possession of a soil already prepared for it.

Summary of evidence.

The evidence in regard to the history of this epidemic which we have been able to obtain may be summed up under the following heads:—

1st. That the late epidemic of scarlet fever is not the first visitation of the kind at Aldershot, but that on the contrary this disease has been in the camp since its earliest formation, although in a much milder form.

2nd. That the attacks have been increasing in severity year by year.

3rd. That the disease has existed, though in a milder degree, among the surrounding indigenous population concurrently with its appearance in camp, and that the late epidemic condition of the disease extended to the population of the surrounding districts.

4th. That the camp is situated in one of the healthiest districts of England, that nevertheless the general mortality among children as well as the mortality from epidemic diseases have been much greater than in the adjoining country.

5th. That in times past scarlet fever has shown a tendency to prevail most severely in the latter eight months of the year.

6th. The late epidemic commenced with unconnected scattered cases occurring at considerable intervals of time, and at considerable distances from each other. There is no evidence of the disease having been imported. Simultaneous attacks took place at different and distant points of the camp, and even of the same building. The disease showed no tendency to spread from any centre or hut. It followed the law of increase and decrease observed in other epidemics. And, as occurs in other epidemics, the intensity of the disease was manifestly influenced by local and personal conditions such as the following:—

7th. The medical evidence brought before us goes to show that the subjects of

* *Vide* Table 31, which also gives the death rates among troops and women. The Table shows that the death rate among men and women, as well as amongst children, is progressively increasing.

scarlet fever have been more especially children of weak scrofulous constitutions; hence that bad health has been an efficient predisposing cause. The cases have been adynamic in character.

8th. All the married quarters, temporary and permanent, are deficient in requirements for health.

The huts in camp chiefly affected have been in comparatively low damp positions with the subsoil undrained.

The cubic space and superficial area in all cases have been deficient, as also the ventilation.

The hut quarters especially have not been in a sufficiently good state as regards cleansing and lime whiting. Domestic operations have been carried on in them, washing clothes, &c., which (considering the small space available) has added to the moisture and impurity of the air. Of no quarter which we examined could it be said that it was sufficiently healthy for children.

There was no circulation of air under the hut floors, the joists being laid on the earth; in some cases the earth has been dug out below the level of the ground outside.

The huts are old and the woodwork has become less and less wholesome from absorbing organized matter proceeding from the bodies and breath of the inmates.

9th. Some of the most severely affected rooms have been ordinary permanent barrack rooms set apart for married accommodation, and the result in this case has apparently arisen from bringing several families with young children together into the same defectively ventilated room where they all had to breathe a common atmosphere (absence, in fact, of proper subdivision of families).

10th. In the permanent married quarters, although affording a superior class of accommodation, there is not sufficient isolation of families; the rooms are too small; they are built back-to-back with passages and stairs common to eight families; the means of ventilation are deficient.

Although none of these circumstances can be said to have given rise to scarlet fever, the history of which, indeed, shows it to have been simply an epidemic, yet all of them are well-known causes of deterioration of health and stamina in children, and also of the existence of scrofula and glandular diseases.

As weakened, scrofulous constitutions were those specially attacked by scarlet fever, we are warranted in concluding that the sanitary defects we have enumerated have acted as predisposing causes of scarlet fever.

Practical suggestions.

We have now arrived at the most important point for consideration, viz., by what means scarlet fever, which has lately assumed an epidemic character at Aldershot, may be arrested or eradicated in future.

No doubt the readiest way to effect this improvement would be to keep children away from the camp, were it practicable to do so. Except for cases and deaths among children at Aldershot, scarlet fever would hardly be worthy of notice so far as the efficiency of the regiments was concerned.*

If children are to continue there as usual, we think it very likely that scarlet fever will return year by year, assuming at times the character of an epidemic, and we are of opinion that there is no way of diminishing the risk of this occurrence except by adopting active measures for improving the general health and stamina of the children.

The first step in this direction is obviously to improve the sanitary condition of quarters, but it is at this point that the difficulty begins, for there is little or no foundation on which to rest improvement.

Camp huts, although well adapted for temporary use with due regard to cubic space and ventilation, cease to be so when the wood is old and when it has become fouled with exhalations from the breath and bodies of the inmates. The evils are greatly increased when the sides and roof are rendered impervious to air, and when there is no ventilation below the floors. With impervious walls the regulation space of 400 cubic feet per man is no longer sufficient, as huts with impervious walls approach in their relations to permanent barracks, in which the cubic space should be 600 feet per man.

As originally constructed the huts had space for 15 men at the present regulation allowance of 400 cubic feet per man.

In actual practice, however, each hut is expected to hold 22 men at 264½ cubic feet per man, or one third more than there is regulation space for. We need scarcely state that barrack huts crowded to this extent cannot keep the troops in robust health.

---

* *Vide* Table 32, which shows that in the six years 1859—1864 in an average strength of 13,346 men, there were 78 admissions from scarlet fever, of which two proved fatal.

We have already shown that when the huts are divided for families, the space for an entire family with its household effects is only 1,358 cubic feet.

In the permanent married quarters the space for an entire family, as has been shown, is no more than 110 square feet, and from 1,000 to 1,100 cubic feet.

It is evident, therefore, that the first measure required is to give more cubic space and area for families.

The best way apparently of doing so would be to construct huts specially adapted for married people. This course of proceeding would have the advantage of substituting healthy for unhealthy construction, and of throwing at liberty a large number of huts at present occupied by married people, which are very much required for the purpose of increasing the amount of space for men.

If this proposal were adopted it would be easy to plan married huts with every requisite for health.

So long as the existing huts are used for married quarters we fear that whatever is done with them the two evils of overcrowding and difficulty of ventilation will keep them unhealthy.

If the existing huts are retained, it would be better to allot, and divide, a hut for no more than two families were there are several children in each family, or for three families where there are few children.

The huts as at present divided into four compartments would answer for four families without children.

The proportionate number of members in families is a very important element in this question, in which economy is so vital a consideration. Perhaps the best way to ensure the two results of health and economy would be to construct huts of different dimensions, and to apportion the amount of accommodation given to the number of children. With limited cubic space at command, the fewer families placed under one roof the better. A separate small hut for each family would enable a smaller extent of space to answer for health than would be possible by placing a number of families under one roof.

Subdivision is one of the main elements in the question, as regards diminishing the liability to epidemic attacks.

We have shown that scarlet fever prevailed to a considerable extent among families quartered in ordinary barrack-rooms. Agglomeration of families was in this case also a potent cause of disease. We must repeat that barrack-rooms are not fit for married quarters, and less so during epidemics than at other times.

They should cease to be used as married quarters with as little delay as possible.

As regards permanent married quarters, the experience of the late epidemic shows that in these quarters, placing eight families under one roof with limited space and area, back-to-back rooms, and community of ventilation throughout all the rooms of each house have tended to predispose to the disease. We have seen that in a number of instances more than one member of a family was attacked by scarlet fever in them. But it is also certain that the proportionate number of attacks and deaths in these permanent married quarters with all their disadvantages was very greatly less than in any other accommodation, except open camps, showing that the provision of these quarters has been a most important step in the right direction, although the construction of the buildings themselves admits of further improvement.

We have endeavoured to obtain some statistical information to enable us to estimate more correctly the probable effects of the form of construction of the Aldershot married quarters, by comparing the course of the disease in them with what occurred in married quarters of a different construction at Woolwich and Chatham. At these two stations the married quarters are constructed on a different principle. There are no inside passages and staircases, and although the cubic space is small all the rooms are entered direct from the open air each by its own door, and each room has two windows and a door in the opposite walls, so that there is a through draft across the rooms.

The data which we have received are too meagre to enable us to arrive at correct conclusions as to the relative healthiness of these quarters when compared with those at Aldershot. We only know that there were very few cases of scarlet fever in the extensive married quarters of these two garrisons during the first six months of the year 1865.*

* The following is the nearest approximation we have been able to arrive at on this important subject for the first six months of 1865.

The average number of children in 48 new married quarters at Brompton is two per room=96. The average is the same at Chatham, and there are 72 rooms, giving 144 children. But the Chatham quarters were only occupied for April, May, and June of the period. For the sake of the six months' comparison it is necessary to take half the number, or 72. At Woolwich there were 306 children in the new married quarters. The total number of children was thus 474. Among these, during the epidemic season, there were 11 admissions from scarlet fever, and one death. The admissions were thus, 2·3 per cent. of the strength, and the deaths 0·2 per cent., which may be compared with the statistics at Aldershot. It is important to remark that although these quarters are constructed on sound principles, every one complains of the overcrowded state of the rooms from deficient space and area.

We have mentioned the circumstance chiefly with the view of pointing out the necessity of keeping accurate records of the number of women and children in married quarters of all classes, and also of epidemic cases coming from each room.

There is a very obvious sanitary advantage to be derived from constructing rooms for families in the way which has been adopted at Woolwich and Chatham. However limited the space may be, each family has really a separate house with its own door and windows, and through and through ventilation.

It would be most advisable to adopt a similar model elsewhere, and to increase the extent of new married quarters at all stations in such a manner as to enable the room space to be apportioned with reference to the numbers of children in families.

Although, as we have shown, the nature of the accommodation has exerted a powerful influence on the course of scarlet fever, it is important to bear in mind that the general sanitary state of the quarters, such as they are, admits of material improvement.

The ground along the lower levels of the South Camp should be thoroughly drained to dry the subsoil.

The space under all the hut floors requires ventilation between each pair of joists from end to end.

The huts occupied as married quarters should all be specially ventilated. The best ventilation we found was in huts with the new ventilating fireplace. But some form of roof ventilation is also required, which will renew the air without causing drafts.

The paper lining of all the huts should be removed and all the woodwork thoroughly scoured and cleansed. Washing with slaked quicklime, or with some cleansing substance containing quicklime, should be adopted several times a year.

Frequent sanitary inspections of married quarters to see that they are kept clean and orderly should also be carried out. All married quarters require separate bath and lavatory accommodation for women and children, besides means for washing and getting up linen away from the quarters.

Measures should at the same time be enforced as far as practicable for improving the general health of the children by attention to cleanliness of person and dress and to proper nourishment. This is a branch of camp hygiène requiring special care, that is, provided children are to be permitted to live in camp at all.

The question of epidemic susceptibility must be looked at and dealt with in all its bearings, but we are of opinion that little will be gained in improving the general health of families until children are removed altogether out of men's barrack rooms, and till families are provided with dwellings and other domestic arrangements in conformity with the obvious requirements of health.

When scarlet fever or any other epidemic disease actually prevails among the children, immediate removal of the sick from among those unattacked; spreading the families over a large superficial area; camping out when the season admits of it, and rigid attention to cleansing and ventilation, as have been carried out at Aldershot during the late epidemic, are the best remedial measures which can be adopted for arresting the spread of the disease, but they are not a substitute for healthy dwellings.

J. HOPE GRANT, Quartermaster-General and President.
DOUGLAS GALTON, Assistant Under Secretary of State for War.
JOHN SUTHERLAND.
T. G. LOGAN, Inspector-General of Hospitals.
EDWARD BELFIELD, Deputy Director of Works, War Office.
PROBY T. CAUTLEY, Member of the Council of India.
J. RANALD MARTIN, Inspector-General of Hospitals.
ROBERT RAWLINSON, Local Government Act Office.

J. J. FREDERICK, Secretary,
Army Sanitary Committee,
War Office, April 20th, 1866.

APPENDIX.

TABLES REFERRED TO IN THE REPORT ON SCARLET FEVER AT ALDERSHOT.

TABLE 1.—Showing the Number of Admissions and Deaths from Scarlatina among the Children *treated in the Hospital* for Soldiers' Wives at Aldershot from 1st January 1859 to 31st December 1864. (Furnished by Inspector-General of Hospitals, T. Ross Jameson, M.D.)

Aldershot, 23rd April 1865.

Year.	Number of Children.	Number of Admissions from Scarlatina.	Number of Deaths from Scarlatina.
1859	1,509	6	2
1860	1,670	11	1
1861	1,494	29	3
1862	1,314	46	8
1863	1,507	20	2
1864	1,762	182	28
*Total -	9,256	294	44

* These numbers are compiled from the returns of the Female Hospital; but in 1864 the deaths among soldiers' children from scarlet fever amounted to 35, besides a fatal case in a man.

TABLE 2.—Showing the Dates of Cases; also the Deaths from Scarlet Fever in the Camp at Aldershot from October 1863 to June 30th, 1865.

Date of Attack.	Cases.			Deaths.			Date of Attack.	Cases.			Deaths.		
	Men.	Women.	Children.	Men.	Women.	Children.		Men.	Women.	Children.	Men.	Women.	Children.
1863.							1864.						
Oct. 23	..	..	1	..	..	..	July 1	..	..	2	..	..	2
							,, 3	..	..	2	..	..	..
Nov. 27	..	..	1	..	..	..	,, 5	..	..	1	..	..	..
							,, 7	..	..	4	..	..	1
Dec. 3	..	..	2	..	..	..	,, 8	..	..	1	..	..	..
							,, 11	..	..	2	..	..	..
1864.							,, 12	..	..	1	..	..	1
Feb. 15	1	..	..	..	..	..	,, 14	..	..	1	..	..	..
							,, 17	..	..	1	..	..	..
Mar. 19	..	..	1	..	..	..	,, 21	..	..	1	..	..	..
							,, 23	..	..	1	..	..	1
Apr. 13	..	..	1	..	..	..	,, 28	..	..	1	..	..	1
							,, 29	..	..	3	..	..	..
May 2	..	..	1	..	..	..							
,, 4	..	..	3	..	..	..		..	..	21	..	..	6
,, 6	..	..	1	..	..	..							
,, 12	..	..	1	..	..	1							
,, 15	..	..	2	..	..	..	Aug. 7	..	..	2	..	..	..
,, 18	..	..	1	..	..	..	,, 9	..	..	3	..	..	1
,, 20	..	..	3	..	..	1	,, 11	..	..	2	..	..	2
,, 21	..	..	2	..	..	..	,, 13	..	..	1	..	..	..
,, 24	..	..	3	..	..	..	,, 14	..	..	1	..	..	..
							,, 15	..	..	2	..	..	1
	..	..	17	..	..	2	,, 18	1	1	..	..	..	..
							,, 19	..	..	1	..	..	..
June 18	..	..	2	..	..	..	,, 21	..	..	2	..	..	2
,, 21	..	..	2	..	..	1	,, 24	..	..	3	..	..	1
,, 22	..	..	1	..	..	..	,, 25	1	..	3	..	..	1
,, 23	..	..	1	..	..	1	,, 27	..	..	2	..	..	..
,, 24	..	..	1	..	..	..	,, 28	1	1	3	..	..	..
,, 25	..	..	1	..	..	..	,, 29	..	..	1	..	..	..
,, 30	..	..	2	..	..	..	,, 30	1	..	3	..	..	1
	..	..	10	..	..	2		4	2	29	..	..	9

TABLE 2—*continued.*

Date of Attack.	Cases.			Deaths.		
	Men.	Women.	Children.	Men.	Women.	Children.
1864.						
Sept. 1	..	..	1	..	..	..
„ 2	..	..	2	..	..	1
„ 4	1	..	3	..	..	3
„ 5	..	..	4	..	..	..
„ 6	..	1	2	..	..	..
„ 7	..	..	2	..	..	..
„ 10	..	..	1	..	..	..
„ 13	..	..	1	..	..	..
„ 14	1	..	1	..	..	..
„ 18	..	..	1	..	..	1
„ 21	..	..	1	..	..	..
	2	1	19	..	..	5
Oct. 1	..	..	3	..	..	1
„ 4	..	..	1	..	..	1
„ 5	..	..	1	..	..	..
„ 9	..	..	1	..	..	..
„ 12	..	..	1	..	..	..
„ 13	..	..	3	..	..	..
„ 14	..	..	1	..	..	..
„ 15	..	..	1	..	..	1
„ 17	..	..	1	..	..	1
„ 20	..	..	1	..	..	1
„ 21	1	..	1	..	..	..
„ 26	1	..	..	1	..	..
„ 27	..	..	1	..	..	..
„ 31	..	..	1	..	..	..
	..	..	4	..	..	1
	2	..	21	1	..	6
Nov. 10	..	..	1	..	..	..
„ 13	..	..	2	..	..	1
„ 14	..	..	1	..	..	..
„ 18	1	..	..	..	..	..
„ 20	..	..	1	..	..	..
„ 21	..	..	1	..	..	..
„ 23	..	..	3	..	..	1
„ 27	1	..	..	..	..	..
„ 29	1	..	1	..	..	..
	3	..	10	..	..	2
Dec. 1	..	..	1	..	..	..
„ 2	..	..	1	..	..	..
„ 3	..	..	1	..	..	..
„ 4	..	..	1	..	..	..
„ 5	..	..	1	..	..	..
„ 7	..	..	2	..	..	..
„ 12	..	..	5	..	..	1
„ 13	..	..	1	..	..	..
„ 27	..	..	1	..	..	..
„ 28	..	..	1	..	..	..
„ 29	..	1	..	..	..	..
„ 30	..	..	4	..	..	1
„ 31	..	..	1	..	..	1
	..	1	20	..	..	3
1865.						
Jan. 1	..	..	3	..	..	1
„ 5	..	..	1	..	..	..
„ 7	1	..	..	..	..	..
„ 11	..	..	3	..	..	..
„ 13	..	..	1	..	..	1
„ 18	..	..	1	..	..	..
„ 19	..	..	2	..	..	..
„ 21	..	..	2	..	..	..
„ 22	1	..	..	..	..	..

Date of Attack.	Cases.			Deaths.		
	Men.	Women.	Children.	Men.	Women.	Children.
1865.						
Jan. 23	..	..	1	..	..	..
„ 24	..	..	2	..	..	1
„ 25	..	..	1	..	..	..
„ 26	1	..	1	1	..	..
„ 30	..	..	1	..	..	1
	3	..	19	1	..	4
Feb. 1	..	1	..	..	..	..
„ 2	..	..	1	..	..	1
„ 6	1	..	..	..	..	..
„ 13	..	..	1	..	..	1
„ 19	..	..	2	..	..	1
„ 20	..	..	3	..	..	1
„ 21	1	..	1	..	..	..
„ 22	..	..	1	..	..	1
„ 28	..	..	3	..	..	..
	..	..	1	..	..	1
	2	1	13	..	..	6
Mar. 1	..	..	1	..	..	..
„ 2	..	..	2	..	..	..
„ 3	..	1	1	..	..	..
„ 6	..	..	1	..	..	..
„ 8	..	..	1	..	..	1
„ 9	..	1	..	..	..	..
„ 10	..	1	..	..	..	..
„ 13	..	..	1	..	..	..
„ 19	..	..	..	..	..	..
„ 26	..	..	1	..	..	..
„ 28	..	..	1	..	..	1
„ 29	..	..	2	..	..	..
	..	3	11	..	..	2
Apr. 1	..	1	..	..	..	..
„ 2	..	..	2	..	..	..
„ 7	..	1	2	..	..	2
„ 9	..	..	1	..	..	..
„ 14	..	..	2	..	..	1
„ 15	..	..	4	..	..	2
„ 17	..	1	..	..	..	..
„ 19	..	..	2	..	..	..
„ 21	..	..	2	..	..	..
„ 22	..	..	3	..	..	..
„ 23	..	..	1	..	..	1
„ 25	..	..	1	..	..	1
„ 26	..	..	1	..	..	1
„ 27	..	..	2	..	..	..
„ 28	..	..	2	..	..	..
„ 29	..	1	1	..	..	..
„ 30	..	..	2	..	..	..
	..	4	28	..	..	8
May 1	..	..	1	..	..	..
„ 3	..	..	3	..	..	..
„ 4	..	..	4	..	..	1
„ 5	..	..	1	..	..	..
„ 6	..	1	3	..	..	..
„ 7	..	..	2	..	..	..
„ 8	..	..	2	..	..	2
„ 9	..	..	1	..	..	..
„ 10	..	..	1	..	..	..
„ 12	..	..	2	..	..	..
„ 13	..	..	3	..	..	1
„ 14	..	..	2	..	..	..
„ 15	..	..	1	..	..	..
„ 16	..	..	2	..	..	1

TABLE 2—*continued.*

Date of Attack.	Cases.			Deaths.		
	Men.	Women.	Children.	Men.	Women.	Children.
1865.						
May 17	..	..	1	..	..	..
„ 18	..	..	2	..	..	..
„ 19	..	..	8	..	..	..
„ 20	..	..	1	..	..	..
„ 21	..	..	4	..	..	..
„ 23	..	..	1	..	..	..
„ 24	..	..	4	..	..	..
„ 25	..	..	2	..	..	..
„ 26	..	..	2	..	..	..
„ 28	..	..	1	..	..	..
„ 29	..	..	2	..	..	..
„ 30	1	..	..	..	..	..
„ 31	..	..	1	..	..	..
	1	1	57	..	..	5
June 1	..	..	1	..	..	..
„ 2	..	1	1	..	..	1
„ 5	..	..	2	..	..	..
„ 7	..	..	1	..	..	..
„ 8	..	..	2	..	..	..
„ 9	..	..	1	..	..	..
„ 14	..	1	2	..	..	..
„ 15	..	..	1	..	..	..
„ 16	..	..	1	..	..	..
„ 19	..	..	3	..	..	..
„ 22	..	..	1	..	..	..
„ 23	..	..	2	..	..	..
„ 27	..	..	1	..	..	..
	..	2	19	..	..	1

ABSTRACT of the preceding Table.

Periods.	Cases.			Deaths.		
	Men.	Women.	Children.	Men.	Women.	Children.
1863.						
October	..	..	1	..	..	..
November	..	..	1	..	..	..
December	..	..	2	..	..	..
1864.						
February	1	..	..	..	..	..
March	..	..	1	..	..	..
April	..	..	1	..	..	..
May	..	..	17	..	..	2
June	..	..	10	..	..	2
July	..	..	21	..	..	6
August	4	2	29	..	..	9
September	2	1	19	..	..	5
October	2	..	21	1	..	6
November	3	..	10	..	..	2
December	..	1	20	..	..	3
1865.						
January	3	..	19	1	..	4
February	2	1	13	..	..	6
March	..	3	11	..	..	2
April	..	4	28	..	..	8
May	1	1	57	..	..	5
June	..	2	19	..	..	1
Totals	18	15	300	2	..	61

GRAND TOTALS.

Cases - - - 333
Deaths - - - 63

TABLE 3.—Showing the Monthly Admissions and Deaths among the Children in the Female Hospital, and the Annual Return of Admissions and Deaths among the Troops from Scarlatina from 1st January 1860 to the 31st December 1864. (Furnished by Inspector-General of Hospitals, T. Ross Jameson, M.D.)

Aldershot, 4th April 1865.

Month.	Children.													
	1860.		1861.		1862.		1863.		1864.		Total.		Periods of 4 Months.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
January - -	..	..	6	..	..	..	2	1	..	..	8	1		
February - -	..	..	..	..	..	..	..	..	..	..	..	..	11	1
March - -	..	..	1	..	..	..	..	..	..	..	1	..		
April - -	..	..	..	..	..	..	2	..	..	..	2	..		
May - -	..	..	4	1	1	..	..	..	11	..	16	1		
June - -	1	..	1	..	5	2	8	1	12	1	27	4	122	18
July - -	..	..	4	..	9	..	4	..	21	3	38	3		
August - -	..	..	..	..	5	2	..	..	36	8	41	10		
September -	3	..	7	1	7	2	..	..	36	8	53	11		
October - -	..	..	2	..	10	..	1	..	21	2	34	2	155	23
November -	4	..	4	1	2	..	1	..	21	3	32	4		
December -	3	1	..	..	7	2	2	..	24	3	36	6		
Total - -	11	1	29	3	46	8	20	2	182	28	288	42	288	42

TABLE 3—*continued.*

RETURN OF MEN.

1860.		1861.		1862.		1863.		1864.		Total.	
Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
26	..	9	1	2	..	1	..	32	1	70	2

TABLE 4.—Of the Dates, Cases, and Deaths from Measles in the Camp at Aldershot from February to June 1865.

Date of Attacks.	Cases.			Deaths.		
	Men.	Women.	Children.	Men.	Women.	Children.
1865.						
Feb. 2	..	..	1	..	..	..
„ 13	..	..	1	..	..	..
„ 16	..	..	1	..	..	..
„ 17	..	..	3	..	..	1
„ 18	..	..	1	..	..	1
„ 19	..	..	2	..	..	2
„ 27	..	..	1	..	..	1
„ 28	..	..	1	..	..	1
	..	..	11	..	..	6
March 3	..	..	1	..	..	1
„ 11	..	..	1	..	..	..
„ 12	..	..	1	..	..	..
„ 18	..	..	1	..	..	..
„ 21	..	..	2	..	..	..
„ 22	..	..	2	..	..	..
„ 27	..	..	1	..	..	..
„ 29	..	..	2	..	..	..
„ 31	..	..	1	..	..	..
	..	..	12	..	..	1
April 1	..	..	1	..	..	..
„ 3	..	..	2	..	..	..
„ 4	..	..	3	..	..	1
„ 5	..	..	2	..	..	..
„ 6	..	..	1	..	..	..
„ 7	..	..	2	..	..	1
„ 8	..	..	3	..	..	..
„ 9	..	..	1	..	..	..
„ 11	..	..	3	..	..	..
„ 13	..	..	1	..	..	..
„ 14	..	..	2	..	..	..
„ 15	..	..	4	..	..	..
„ 17	..	..	2	..	..	..
„ 18	..	..	3	..	..	..
„ 19	..	..	3	..	..	..
„ 20	..	..	2	..	..	..
„ 21	..	..	1	..	..	..
„ 22	..	..	9	..	..	..
„ 23	..	..	3	..	..	..
„ 24	..	..	2	..	..	..
„ 25	..	..	1	..	..	..
„ 27	..	..	1	..	..	..
„ 30	..	..	2	..	..	..
	..	..	54	..	..	2

Date of Attacks.	Cases.			Deaths.		
	Men.	Women.	Children.	Men.	Women.	Children.
1865.						
May 2	..	..	2	..	..	..
„ 3	..	..	1	..	..	..
„ 4	..	..	4	..	..	..
„ 8	..	..	3	..	..	..
„ 9	..	..	4	..	..	..
„ 15	..	..	1	..	..	..
„ 17	..	..	1	..	..	..
„ 18	..	..	1	..	..	..
„ 19	..	..	2	..	..	..
„ 21	..	..	1	..	..	..
„ 30	..	..	1	..	..	..
	..	..	21	..	..	..
June 8	..	..	2	..	..	..
„ 9	..	..	1	..	..	..
„ 10	..	..	1	..	..	..
„ 11	..	..	1	..	..	..
„ 14	..	..	1	..	..	..
„ 16	..	..	1	..	..	..
„ 20	..	..	4	..	..	..
„ 25	..	..	3	..	..	..
„	..	..	1	..	..	..
„	..	..	1	..	..	..
	..	..	16	..	..	..

ABSTRACT OF THE PRECEDING TABLE.

Periods.	Cases.			Deaths.		
	Men.	Women.	Children.	Men.	Women.	Children.
1865.						
February	..	..	11	..	..	6
March	..	..	12	..	..	1
April	..	..	54	..	..	2
May	..	..	21	..	..	..
June	..	..	16	..	..	..
Totals	..	..	114	..	..	9

GRAND TOTALS.

Cases	114
Deaths	9

TABLE 5.—Showing the estimated Population and Number of Deaths from Scarlatina, (including Military,) in the Districts of Farnborough and Farnham, in each Year from 1859 to 1864.—(Furnished by the Registrar General.)

Years.	Estimated Population (at the Middle of each Year).		Deaths from Scarlatina.	
	Farnborough.	Farnham.	Farnborough.	Farnham.
1859	13,819	28,489	1	8
1860	14,101	29,727	1	10
1861	14,391	31,044	5	8
1862	14,690	32,444	4	18
1863	14,996	33,933	5	23
1864	15,312	35,516	16	102

NOTE A.—At the Census of 1861, the number of military in the Camp at Aldershot was in Farnborough 3,929, and in Farnham 8,965 ; it is here assumed that the numbers were constant in each of the years in this Table. If more correct information as to the number of military can be obtained, the figures in the Table should be corrected accordingly.

NOTE B.—The abstracts of diseases do not distinguish the military, but in the year 1864, when the mortality from scarlatina was highest, there were only two deaths at soldiers' ages, one being that of a barrack master's son, and the other that of a shoemaker at Farnham.

TABLE 6.— Showing Population in 1861 under 15 Years of Age. (Furnished by the Registrar General.)

Farnham	8,238
Farnborough	3,922

NUMBER of Deaths by Scarlatina and Diptheria in the Superintendent Registrar's Districts of Farnham and Farnborough from 1st January to 30th June 1865.

Cause of Death.	Farnham.		Farnborough.	
	For the Three Months ending the last Day of March 1865.	For the Three Months ending the last Day of June 1865.	For the Three Months ending the last Day of March 1865.	For the Three Months ending the last Day of June 1865.
Scarlatina - -	31	44	9	7
Diptheria - -	1	1	3	..

TABLE 7.—Showing the Cases and Deaths from Scarlet Fever and Measles in different Arms in the Camp at Aldershot from October 23rd, 1863, to June 30th, 1865.

Corps.	Scarlet Fever.		Measles.		Adults attacked with Scarlet Fever.
	Cases.	Deaths.	Cases.	Deaths.	
Staff - - - -	4	1	5	..	
Royal Engineers - - -	7	4	10	1	
Artillery.					
Royal Horse Artillery - - -	12	6	3	..	1 man, fatal.
4th Brigade Royal Artillery - -	10	2	..	..	
9th „ „ - -	41	10	10	..	3 men and 1 woman ; in one man fatal.
Artillery not distinguished in return supplied - - - - - -	1	1	..	..	
	64	19	13	..	
Cavalry.					
1st Dragoons - - - -	2	..	..	..	1 man.
2nd „ - - - -	8	3	..	..	1 man.
5th Lancers - - - -	..	..	1	..	
14th Hussars - - - -	22	3	1	..	4 women and 1 man.
Military Train - - - -	23	3	6	..	
Cavalry not distinguished in return supplied - - - - - -	11	3	..	..	
	66	12	8	..	

TABLE 7—*continued.*

Corps.	Scarlet Fever.		Measles.		Adults attacked with Scarlet Fever.
	Cases.	Deaths.	Cases.	Deaths.	
Infantry.					
Scotch Fusilier Guards	..	..	1	..	
1/13th Regiment	20	1	4	..	1 woman.
1/14th „	15	1	17	1	1 man and 1 woman.
1/21st „	6	1	..	..	1 man and 1 woman.
31st „	..	..	4	..	
39th „	7	4	..	..	
44th „	..	..	1	..	
59th „	32	7	..	..	
62nd „	27	1	11	..	4 men and 3 women.
69th „	2	..	..	..	
75th „	6	1	1	..	1 man.
83rd „	11	1	..	..	3 men.
85th „	12	1	24	7	2 men.
92nd „	3	..	4	..	
Infantry not distinguished in return supplied	39	5	..	..	
	180	23	67	8	
Schools	..	..	2	..	
Store department	2	1	1	..	
Army Hospital Corps	3	3	1	..	
Barrack department	4	..	..	..	1 woman.
Purveyors' department	1	..	..	..	
Medical officers' servants	2	..	..	..	Dr. Barry's servants (2 women).
Civilians	..	..	7	..	

SUMMARY OF THE FOREGOING TABLE.

Arm of the Service.	Scarlet Fever.		Measles.		Remarks.
	Cases.	Deaths.	Cases.	Deaths.	
Staff	4	1	5	..	
Royal Engineers	7	4	10	1	
Artillery	64	19	13	..	
Cavalry	66	12	8	..	
Infantry	180	23	67	8	
Schools	..	..	2	..	
Store department	2	1	1	..	
Army Hospital Corps	3	3	1	..	
Barrack department	4	..	..	..	
Purveyors' department	1	..	..	..	
Medical officers' servants	2	..	..	..	
Civilians	..	..	7	..	
Grand Total	333	63	114	9	

TABLE 8.—Showing the Dates and Localities of Scarlet Fever Cases; (also the Number of Inmates in Rooms or Huts, and the Distance in Feet at which consecutive Attacks occurred in the First 55 Cases).

Date.	Hut or Room attacked.	Scarlet Fever.		Number of Inmates in Rooms or Huts.	Distance between Rooms or Huts in Feet.
		Cases.	Deaths.		
1863.					
October 23	Infantry barracks, centre block	1	..	Not known.	
November 27	19 hut, M. lines, S. Camp	1	..	16	1,800
December 3	37 hut, F. „ „	2	..	8	750
1864.					
February 15	East block, cavalry barracks (a man)	1	..	16	3,000
March 19	10 hut, H. lines, N. Camp	1	..	Not known.	8,000
April 13	6 troop room, S. cavalry barracks	1	..	16	10,000

TABLE 8—*continued.*

Date.	Hut or Room attacked.	Scarlet Fever.		Number of Inmates in Rooms or Huts.	Distance between Rooms or Huts in Feet.
		Cases.	Deaths.		
1864.					
May 2	1 hut rear of barrack stores, S. Camp	1	..	2 families, one consisting of six persons.	7,580
„ 4	Officers' hut, R. lines „	3	..	7	1,300
„ 6	„ „ „	1	..	7	..
„ 12	Married quarters, W. cavalry barracks, 16 room	1	1	5	5,500
„ 15	„ „ „ 10 room	1	..	4	..
„ „	10 Troop room „ „	1	..	15	500
„ 18	Married quarters, W. cavalry barracks 16 room	1	..	4	500
„ 20	32 troop room, S. cavalry barracks	1	1	14	950
„ „	3 hut, S. lines, S. Camp	1	..	6	5,500
„ „	Officers' mess kitchen, S. lines, S. Camp	1	..	3	150
„ 21	3 hut, S. lines, S. Camp	1	..	6	150
„ „	2 „ X. „ „	1	..	6	850
„ 24	Engineer's cottage, near Pavilion Hotel	1	..	5	7,800
„ „	3 hut, R. lines, S. Camp	1	..	Not known.	7,500
„ „	Married quarters, 6 room, W. cavalry barracks	1	..	4	5,600
June 18	24 hut, R. lines, S. Camp.	1	..	8	5,400
„ „	V. hospital canteen „	1	..	Not known.	1,530
„ 21	3 hut, X. lines „	1	1	12	2,000
„ „	22 „ N. „ „	1	..	4	1,050
„ 22	Messman's quarter back room E. cavalry barracks	1	..	6	4,000
„ 23	F. O. quarters, R. lines. S. Camp	1	1	5	4,250
„ 24	2 officers' hut, S. lines, S. Camp	1	..	8	550
„ 25	Married quarters, E. cavalry barracks, 32 room	1	..	3	3,700
„ 30	2 hut, X. lines, S. Camp	1	..	6	4,750
„ „	5 „ „ „	1	..	10	110
July —	Troop room, S. cavalry barracks	1	1	Not known.	7,000
„ 1	F. O. quarters, R. lines, S. Camp	1	1	4	6,550
„ 3	16 hut, O. lines, N. Camp	1	..	13	5,200
„ „	20 „ L. „ „	1	..	17	850
„ 5	„ „ „	1	..	17	..
„ 7	Villa in Victoria road	1	1	Not known.	8,200
„ „	3 hut, X. lines, S. Camp	1	..	12	4,000
„ „	2 „ „ „	1	..	4	100
„ „	2 officers' hut, S. lines „	1	..	8	1,070
„ 8	22 hut, R. lines „	1	..	5	550
„ 11	30 „ Y. „ „	1	..	15	650
„ „	22 „ N. „ „	1	..	4	1,100
„ 12	25 „ A. „ N. Camp	1	1	12	5,100
„ 14	No. 2 servants' kitchen, V. lines, S. Camp	1	..	5	6,650
„ 17	1 hut, barrack serjeants,' near Pavilion Hotel	1	..	6	5,850
„ 21	6 „ O. lines, S. Camp	1	..	14	6,700
„ 23	24 „ R. „ „	1	1	5	550
„ 28	Artillery barracks, M. S. qrs., 6 room B. passage,	1	1	4	2,480
„ 29	25 hut, N. lines, S. Camp	1	..	8	3,000
„ „	15 „ L. „ „	1	..	8	1,500
„ „	22 „ R. „ „	1	..	5	1,460
					Remarks.
August 7	5 barrack room, permanent barracks, down stairs	1	..		
„ „	„ „ „	1	..		
„ 9	3 hut, O. lines, S. Camp	1	1		
„ „	5 barrack room, permanent barracks, up stairs	1	..		
„ „	„ „ „	1	..		
„ 11	„ „ „	1	1		
„ „	„ „ „	1	1		
„ 13	4 „ „ „	1	..		
„ 14	"Out of barracks"	1	..		
„ 15	7 room, permanent barracks, up stairs	1	..		
„ „	Steward's quarters, new hospital hut	1	1		
„ 18	6 barrack room, W. cavalry barracks up stairs	1	..	A woman.	
„ „	15 hut, L. lines, N. Camp	1	..	A private.	
„ 19	7 and 8 room, B. passage, M. S. qrs. artill. bks.	1	..		
„ 21	3 hut, O. lines, N. Camp	1	1		
„ „	19 „ K. „ „	1	1		
„ 24	24 barrack room, permanent barracks, down stairs	1	..		
„ „	Steward's quarters, new hospital hut	1	1		
„ „	4 barrack room, infantry barracks, down stairs	1	..		
„ 25	19 hut, E. lines, S. Camp	1	..		
„ „	1 „ B. „ „	1	..		
„ „	19 „ E. „ „	1	1		
„ „	5 barrack room, infantry barracks, down stairs	1	..	A private.	

TABLE 8—*continued.*

Date.	Hut or Room attacked.	Scarlet Fever.		Remarks.
		Cases.	Deaths.	
1864.				
August 27 -	5 barrack room, artillery barracks, up stairs -	1	..	
„ „	18 hut, E. lines, S. Camp - - -	1	..	
„ 28 -	G. passage, married qrs., E. infy. bks. down stairs	1	..	
„ „ -	33 barrack room, permanent barracks, down stairs	1	..	
„ „ -	Hospital hut, V. lines, S. Camp - - -	1	..	A private.
„ „ -	4 room, A. pass. M. S. qrs., centre infantry bcks.	1	..	A woman.
„ „ -	19 hut, C. lines, N. Camp - - -	1	..	
„ 29 -	22 „ E. „ S. Camp - - - -	1	..	
„ 30 -	20 „ „ „ - - - -	3	1	
„ „ -	10 room, centre infantry barracks, up stairs -	1	..	A private.
September 1 -	Residing in " New Town " - - -	1	..	
„ 2 -	33 room, Royal Horse Artill. bcks., down stairs -	1	1	
„ „ -	20 hut, E. lines, S. Camp - - -	1	..	
„ 4 -	H. pass., married qrs., E. infy. bcks., down stairs	1	1	
„ „ -	20 hut, E. lines, S. Camp - - -	1	1	
„ „ -	12 „ „ „ - - - -	1	1	
„ „ -	6 room, infantry barracks, down stairs - -	1	..	A private.
„ 5 -	12 hut, E. lines, S. Camp - - -	3	..	
„ „ -	15 „ „ „ - - - -	1	..	
„ 6 -	6 barrack room, West cavalry barracks, up stairs	1	..	A woman.
„ „ -	12 hut, E. lines, S. Camp - - -	1	..	
„ „ -	10 „ „ „ - - - -	1	..	
„ 7 -	H. pass., married qrs., E. infy. bcks., down stairs	1	..	
„ „ -	25 hut, O. lines, N. Camp - - -	1	..	
„ 10 -	15 „ E. „ S. Camp - - -	1	..	
„ 13 -	7 & 8 rooms, D. pas., M. S. qrs., E. inf. bks., up stirs	1	..	
„ 14 -	3 room, F. pas., M. S. qrs., E. infy. bks., dwn stairs	1	..	
„ „ -	17 barrack room, infantry barracks, up stairs -	1	..	A private.
„ 18 -	6 barrack room, W. cavalry barracks - -	1	1	
„ 21 -	10 hut, E. lines, S. Camp - - -	1	..	
October 1 -	32 room, E. infantry barracks, down stairs -	1	1	
„ „ -	7 and 8 rooms, D. pas., M. S. qrs., E. infy. bcks -	1	..	
„ „ -	7 and 8 „ B. „ „ „ -	1	..	
„ 4 -	32 barrack room, E. infy. bcks., down stairs -	1	1	
„ 5 -	3 hut, E. lines, S. Camp - - - -	1	..	
„ 9 -	12 „ „ „ - - - -	1	..	
„ 12 -	15 „ „ „ - - - -	1	..	
„ 13 -	12 „ „ „ - - - -	1	..	
„ „ -	1 „ O. „ N. Camp - - - -	1	..	
„ „ -	18 „ E. „ S. Camp - - - -	1	..	
„ 14 -	6 room, married qrs., S. cavalry bcks., up stairs -	1	..	
„ 15 -	17 hut, E. lines, S. Camp - - -	1	1	
„ 17 -	31 „ H. „ N. Camp - - -	1	1	
„ 20 -	15 „ D. „ „ - - - -	1	1	
„ 21	16 „ M. „ „ - - - -	1	..	A private.
„ 26 -	2 room, E. infantry barracks, up stairs - -	1	1	A driver, R. H. A.
„ 27 -	6 „ married qrs., S. cavalry bcks., up stairs -	1	..	
„ 31 -	20 hut, E. lines, S. Camp - - -	1	..	
„ „ -	1 hut, C. „ N. Camp - - -	1	1	
November 10 -	18 „ E. „ S. Camp - - -	4	..	
„ 13 -	4 „ E. „ „ - - -	1	1	
„ 14 -	2 „ B. passage, Royal Artill. married qrs. -	2	..	
„ 18 -	2 „ B. lines, N. Camp - - -	1	..	A private.
„ 20 -	40 „ M. „ „ - - - -	1	..	
„ 21 -	2 room, B. passage, Roy. Artill. married qrs. -	1	..	
„ 23 -	31 „ centre infantry barracks - -	1	..	
„ „ -	40 hut, M. lines, N. Camp - - -	1	1	
„ „ -	39 „ „ „ - - - -	1	..	
„ 27 -	12 „ L. „ „ - - - -	1	..	A corporal.
„ 29 -	6 room, W. cavalry barracks, up stairs - -	1	..	A private.
„ „ -	5 „ „ „ „ - -	1	..	
Deecmber 1 -	5 „ „ „ „ - -	1	..	
„ 2 -	17 „ „ cavalry married qrs., down stairs -	1	..	
„ 3 -	20 hut, O. lines, N. Camp - - -	1	..	
„ 4 -	21 „ M. „ S. Camp - - -	1	..	
„ 5 -	40 „ M. „ N. Camp - - -	1	..	
„ 7 -	3 „ A. „ S. Camp - - -	1	..	
„ „ -	23 „ G. „ „ - - - -	1	..	
„ 12 -	31 barrack room, centre infantry barracks -	1	1	
„ „	21 hut, Y. lines, S. Camp - - -	4	..	
„ 13 -	1 „ H. „ N. Camp - - -	1	..	
„ 27 -	17 room, married qrs., W. cvlry bks., down stairs	1	..	
„ 28 -	31 barrack room, centre block, down stairs -	1	..	
„ 29 -	5 „ „ W. cavalry barrack, up stairs -	1	..	A woman.

TABLE 8—*continued.*

Date.	Hut or Room attacked.	Scarlet Fever.		Remarks.
		Cases.	Deaths.	
1864.				
December 30 -	31 barrack room, centre block, down stairs -	1	..	
„ „ -	30 „ „ „ -	3	1	
„ 31 -	35 „ permanent barracks, down stairs	1	1	
1865.				
January 1 -	31 barrack room, centre infantry barracks -	3	1	
„ 5 -	21 hut, Y. lines, S. Camp - - -	1	..	
„ 7 -	6 ward union hospital - - - -	1	..	A corporal.
„ 11 -	31 barrack room, centre infantry barracks -	3	..	
„ 13 -	31 hut, H. liles, N. Camp - - -	1	1	
„ 18 -	31 barrack room, centre infantry barracks -	1	..	
„ 19 -	Children's hospital - - - -	1	..	
„ „ -	18 hut, E. lines, S. Camp - - -	1	..	
„ 21	3 room, B. passage, married qrs., artillery bks. -	1	..	
„ „ -	3 „ C. „ „ „ -	1	..	
„ 22 -	2 barrack room, permanent artill. bks., up stairs	1	..	A driver, Roy. Artill.
„ 23 -	4 room, B. passage, married quarters, artill. bks.	1	..	
„ 24 -	2 „ permanent married quarters „ -	2	1	
„ 25 -	15 „ staff quarters, up stairs - - -	1	..	
„ 26 -	39 barrack room, centre block, up stairs - -	1	..	
„ „ -	39 „ „ inf. bks., dwn. stairs	1	1	A gunner, Roy. Artill.
„ 30 -	31 „ „ „ up stairs -	1	1	
February 1 -	41 „ „ „ „ -	1	..	A woman.
„ 2 -	40 „ „ „ „ -	1	1	
„ 6 -	18 hut, M. lines, S. Camp - - -	1	..	A private.
„ 13 -	16 „ „ „ - - - -	1	1	
„ 19 -	1 barrack room, permanent artillery barracks -	1	..	
„ „ -	7 „ „ barrack, up stairs -	1	1	
„ 20 -	27 room, married qrs., S. cavalry bks., down stairs	1	1	
„ „ -	12 hut, Y. lines, S. Camp - - -	2	..	
„ 21 -	2 barrack room, artillery barracks, up stairs -	1	..	A driver, Roy. Artill.
„ „ -	3 room, C. passage, married qrs., artillery bks. -	1	..	
„ 22 -	7 barrack room, permanent barracks, up stairs -	1	1	
„ 28 -	6 room, W. cavalry married quarters, up stairs -	1	..	
„ „ -	3 „ staff quarters, W. cavalry barracks -	2	..	
„ „ -	2 hut, H. lines, N. Camp - - -	1	1	
March 1 - -	2 room, staff quarters, W. cavalry barracks -	1	..	
„ 2 - -	3 „ married quarters „ „ -	1	..	
„ „ - -	2 „ staff quarters „ „ -	1	..	
„ 3 - -	2 „ „ „ „ -	2	..	One a woman.
„ 6 - -	1 hut, D. lines, N. Camp - - -	1	..	
„ 8 - -	Women's hospital - - - -	1	1	
„ 9 - -	Canteen, centre infantry barracks - -	1	..	A woman.
„ 10 - -	1 hut, G. lines, S. Camp - - - -	1	..	A woman.
„ 13 - -	52 barrack room, E. block, infantry barracks -	1	..	
„ 19 - -	15 „ permanent barracks, W. block -	1	..	
„ 26 - -	Women's hospital - - - -	1	..	
„ 28 - -	7 hut, O. lines, S. Camp - - - -	1	1	
„ 29 - -	Staff quarters, Q. lines, S. Camp - -	1	..	
„ „ - -	6 room, S. cavalry barracks - - -	1	..	
April 1 - -	F. O. quarters, V. lines, S. Camp - -	1	..	A woman.
„ 2 - -	9 hut, M. lines, S. Camp - - - -	1	..	
„ „ - -	Staff quarters, Q. lines, S. Camp - -	1	..	
„ 7 - -	1 room, married quarters, S. cavalry barracks -	2	2	
„ „ - -	F. O. quarters, V. lines, S. Camp - -	1	..	A woman.
„ 9 - -	15 barrack room, E. infantry barracks - -	1	..	
„ 14 - -	Staff quarters, Q. lines, S. Camp - -	1	..	
„ „ - -	2 hut, A. lines, N. Camp - - -	1	1	
„ 15 - -	20 „ N. „ S. „ - - -	1	..	
„ „ - -	5 „ O. „ „ - - - -	1	1	
„ „ - -	9 room, E. cavalry barracks - - -	1	..	
„ „ - -	Staff quarters, Q. lines, S. Camp - -	1	1	
„ 17 - -	Women's hospital - - - -	1	..	A woman.
„ 19 - -	E. passage, M. S. qrs., centre infantry barracks -	1	..	
„ „ - -	21 hut, M. lines, N. Camp - - -	1	..	
„ 21 - -	Winchester villa, Victoria road - - -	2	..	
„ 22 - -	23 hut, Q. lines, S. Camp - - -	1	..	
„ „ - -	3 room, centre infantry barracks - -	1	..	
„ „ - -	6 „ C. passage, M. S. qrs., centre infy. bks. -	1	..	
„ 23 - -	8 barrack room, centre infantry barracks -	1	1	
„ 25 - -	6 „ artillery barracks - -	1	1	
„ 26 - -	Steward's quarters, new hospital huts - -	1	1	
„ 27 - -	8 room, G. passage, M. S. qrs., W. block -	1	..	
„ „ - -	5 hut, X. lines, S. Camp - - -	1	..	
„ 28 - -	9 „ B. „ N. „ - - - -	1	..	
„ „ - -	31 „ H. „ S. „ - - - -	1	..	

TABLE 8—*continued.*

Date.	Hut or Room attacked.	Scarlet Fever.		Remarks.
		Cases.	Deaths.	
1865.				
April 29	4 room, G. passage, M. S. qrs., centre infy. bks.	1	..	
„ „	53 barrack room, East block „	1	..	A woman.
„ 30	6 and 7 rooms, E. pass., M. S. qrs., centre inf. bks.	1	..	
„ „	1 and 2 rooms, E. pass., M. S. qrs., centre inf. bks.	1	..	
May 1	8 room, G. pass., M. S. qrs., W. infantry barracks	1	..	
„ 3	55 barrack room, E. block	1	..	
„ „	5 room, A. passage, M. S. qrs., W. infy. barracks	1	..	
„ „	1 „ Staff quarters, W. cavalry barracks	1	..	
„ 4	23 hut, H. lines, S. Camp	1	..	
„ „	20 „ N. „ „	1	1	
„ „	B. canteen, S. Camp	2	..	
„ 5	Married quarters near barrack stores	1	..	
„ 6	3 room, B. passage, M. S. qrs., centre infy. bks.	1	..	
„ „	2 „ staff quarters, W. infantry barracks	1	..	A woman.
„ „	1 and 3 room, G. pass. M. S. qrs., W. infy. bks.	1	..	
„ „	1 room, A. passage, centre infantry barracks	1	..	
„ 7	6 and 7 G. „ west infantry barracks	1	..	
„ „	20 hut, N. lines, S. Camp	1	..	
„ 8	5 „ X. „ „	2	2	
„ 9	Tent on Windy Gap Hill	1	..	
„ 10	2 room, staff quarters, W. infantry barracks	1	..	
„ 12	Telegraph hut, Q. lines	1	..	
„ „	3 room, F. passage, M. S. qrs., E. infantry bcks.	1	..	
„ 13	5 hut, H. lines, S. Camp	1	..	
„ „	8 „ O. „ „	1	..	
„ „	55 barrack room, E. infantry barracks	1	1	
„ 14	8 hut, G. lines, S. Camp	1	..	
„ „	Canteen B. „ „	1	..	
„ 15	5 hut, X. „ „	1	..	
„ 16	2 room, staff quarters, W. infantry barracks	1	..	
„ „	Tent, Windy Gap Hill	1	1	
„ 17	8 hut, M. lines, S. Camp	1	..	
„ 18	Tents, Windy Gap Hill	1	..	
„ „	4 house, Westbourne terrace	1	..	
„ 19	10 barrack room, W. block, permanent barracks	1	..	
„ „	5 room, C. passage, M. S. qrs., E. infantry bks.	1	..	
„ „	7 „ G. „ „ centre infantry bks.	1	..	
„ „	Tents, Windy Gap Hill	4	..	
„ „	1 barrack room, S. cavalry barracks	1	..	
„ 20	53 „ centre infantry barracks	1	..	
„ 21	62 house, Westbourne terrace	1	..	
„ „	55 barrack room, E. infantry barracks	1	..	
„ „	Tent, Windy Gap Hill	1	..	
„ „	5 hut, X. lines, S. Camp	1	..	
„ 23	Canteen, centre infantry barracks	1	..	
„ 24	31 hut, R. lines, S. Camp	4	..	
„ 25	„ „ „	2	..	
„ 26	„ „ „	1	..	
„ „	2 room, F. passage, M. S. qrs., W. infantry bks.	1	..	
„ 28	Tent, Windy Gap Hill	1	..	
„ 29	15 hut, A. lines, N. Camp	1	..	
„ „	6 and 7 rooms, E. pass., M. S. qrs., centre inf. bks.	1	..	
„ 30	2 hut, B. lines, N. Camp	1	..	A private.
„ 31	Tent, Windy Gap Hill	1	..	
June 1	„ „	1	..	
„ 2	17 hut, N. lines, S. Camp	1	1	
„ „	40 barrack room, centre infantry barracks	1	..	A woman.
„ 5	12 hut, G. lines, S. Camp	1	..	
„ „	14 „ K. „ „	1	..	
„ 7	Tents, Iron Church Camp	1	..	
„ 8	„ „ „	2	..	
„ 9	„ „ „	1	..	
„ 14	1 hut, near barrack stores	1	..	A woman.
„ „	8 „ O. lines, S. Camp	1	..	
„ „	Anderson's cottage	1	..	
„ 15	House in Waterloo Road	1	..	
„ 16	Tents, Jersey Cottage	1	..	
„ 19	24 barrack room, W. infantry barracks	1	..	
„ „	Tents, Cove Common	2	..	
„ 22	14 hut, D. lines, N. Camp	1	..	
„ 23	Tents, Iron Church Camp	1	..	
„ „	3 hut, X. lines, S. Camp	1	..	
„ 27	House in Victoria Road	1	..	

TABLE 9.—Showing approximate Distribution of Women and Children in the Permanent Barracks and Huts at Aldershot during the year 1864. (Furnished by Deputy Inspector-General of Hospitals, R. C. Elliot.)

Accommodation.	Women.	Children.
East, West, and South Permanent Cavalry Barracks.		
Barrack rooms	47	61
Married quarters	124	176
Royal Artillery and Royal Horse Artillery in Permanent Barracks.		
Barrack rooms,	76	114
Married Quarters	24	46
Three Blocks Permanent Infantry Barracks.		
Barrack rooms	20	41
Married quarters	162	261
Lines—North Camp	278	296
Lines—South Camp	478	767
Total	1,209	1,762

TABLE 10.—Showing the Number of Cases and Deaths from Scarlet Fever and Measles in Officers and Non-Commissioned Officers' Quarters.

OFFICERS' QUARTERS.

Corps in Occupation.	Room, &c.	Scarlet Fever. Cases.	Scarlet Fever. Deaths.	Measles. Cases.	Measles. Deaths.	Date of first and last Attack of Scarlet Fever.	Remarks.
Staff.							
Staff	F. O. qrtrs. V. lines S. Camp	2	..	..	..	1 & 7 April 1865.	2 women.
„	Staff qrtrs. Q. lines S. Camp	4	1	..	..	29 March & 15 April 1865.	
„	Commander-in-Chief's hut	..	..	1	..		
„	R.E. hut, Avenue Road	..	..	3	..		
„	Military Stores	..	..	1	..		
Military Train	1 Offrs'. hut R. lines S. Camp	..	..	1	..		
„	3 „ S. „ „	..	..	4	..		
Infantry.							
Not given	Offrs'. hut R. lines S. Camp	4	..	..	..	4 to 6 May 1864.	
„	F.O. qrtrs. „ „	2	2	..	..	23 June & 1 July 1864.	
„	2 Offrs'. hut S. „ „	2	..	..	..	24 June & 7 July 1864.	
85th Regiment	1 Offrs'. hut T. lines S. Camp	..	..	6	..		
	Totals	14	3	16	..		

NON-COMMISSIONED OFFICERS' QUARTERS.

Cavalry.							
14th Hussars	1 Staff qrtrs. W. clvry bks.	1	..	..	..	3 May 1865.	
„	3 „ up stairs	2	..	..	..	28 February 1865.	
„	15 „ „	1	..	..	..	25 January 1865.	
Infantry.							
1/13th Regt.	2 room Stff. qrtrs. W. inf. bks.	7*	..	1	..	1 March & 16 May 1865.	* 4 of these occurred between March 1 & 3, 1865; 2 in women.
1/14th Regt.	Hspl. srgnt's. qrtrs. V. lines S. Camp.	..	..	1	..		
Army Hspl. Corps.	Stwrd's. qrtrs. new hspl. hut	3	3	..	..	15 Aug. '64, & 26 April '65.	
	Totals	14	3	2	..		

TABLE 11.—Showing the Number of Attacks and Deaths from Scarlet Fever and Measles in Men's Huts in the Lines of the North Camp, Aldershot.

Lines.	Huts.	Scarlet Fever.		Measles.		Dates of first and last Attacks of Scarlet Fever in each Hut.	Remarks.
		Cases.	Deaths.	Cases.	Deaths.		
A.	No. 2	1	1	..	..	14 April 1865.	
	„ 15	1	..	..	..	29 May 1865.	
	„ 25	1	1	..	..	12 July 1864.	
B.	No. 2	2	..	..	..	18 Nov. 1864 & 30 May 1865.	Two men.
	„ 9	1	..	..	..	28 April 1865.	
C.	No. 1	4	1	..	..	31 Oct. 1864.	
	„ 19	1	..	..	..	28 Aug. 1864.	
	„ 32	..	..	1	..		
D.	No. 1	1	..	..	..	6 March 1865.	
	„ 14	1	..	..	..	22 June 1865.	
	„ 15	1	1	..	..	20 Oct. 1864.	
H.	No. 1	1	..	..	..	13 Dec. 1864.	
	„ 2	1	1	..	..	— Feb. 1865.	
	„ 10	1	..	..	..	19 March 1864.	
	„ 31	2	2	..	..	17 Oct. 1864, & 13 Jan. 1865.	
I.	No. 21	..	..	1	..		
K.	No. 19	1	1	..	..	21 Aug. 1864.	
L.	No. 12	1	..	..	..	27 Nov. 1864 - - -	A corporal.
	„ 15	1	..	..	..	18 Aug. 1864 - - -	A private.
	„ 20	2	..	..	..	3 and 5 July 1864.	
M.	No. 16	1	..	..	..	21 Oct. 1864 - - -	A private.
	„ 21	1	..	..	..	19 April 1865.	
	„ 39	1	..	..	..	23 Nov. 1864.	
	„ 40	3	1	..	..	20 Nov. & 5 Dec. 1864.	
O.	No. 1	1	..	..	..	13 Oct. 1864.	
	„ 3	1	1	..	..	21 Aug. 1864.	
	„ 16	1	..	..	..	3 July 1864.	
	„ 20	1	..	..	..	3 Dec. 1864.	
	„ 25	1	..	..	..	7 Sept. 1864.	

TABLE 12.—Showing the total Number of Attacks and Deaths from Scarlet Fever and Measles in each of the Lines of the North Camp, Aldershot.

Lines.	Number of Huts attacked.	Scarlet Fever.		Measles.		Dates of first and last Attacks of Scarlet Fever in each Line.	Remarks.
		Cases.	Deaths.	Cases.	Deaths.		
A.	3	3	2	..	..	12 July 1864, & 29 May 1865.	
B.	2	3	..	..	..	18 Nov. 1864, & 30 May 1865	Two men.
C.	3	5	1	1	..	28 Aug. & 31 Oct. 1864.	
D.	3	3	1	..	..	20 Oct. 1864, & 22 June 1865.	
H.	4	5	3	..	..	19 March 1864, & Feb. – 1865.	
I.	1	..	..	1	..		
K.	1	1	1	..	..	21 Aug. 1864.	
L.	3	4	..	..	..	3 July & 27 Nov. 1864 -	Two men.
M.	4	6	1	..	..	21 Oct. 1864, & 19 April 1865	One man.
O.	5	5	1	..	..	3 July & 3 Dec. 1864.	
Totals	29	35	10	2	..		

TABLE 13.—Showing the Number of Attacks and Deaths from Scarlet Fever and Measles in Men's Huts in the Lines of the South Camp, Aldershot.

Lines.	Huts.	Scarlet Fever.		Measles.		Dates of first and last Attacks of Scarlet Fever in each Hut.	Remarks.
		Cases.	Deaths.	Cases.	Deaths.		
A.	No. 3	1	..	..	..	7 Dec. 1864.	
	„ 24	..	..	1	..		
B.	No. 1	1	..	..	..	25 Aug. 1864.	
D.	No. 1	..	..	2	..		
E.	No. 3	1	..	..	..	5 Oct. 1864,	
	„ 4	2	1	..	..	13 Nov. 1864.	
	„ 9	..	..	2	..		
	„ 10	2	..	..	..	6 & 21 Sept. 1864.	
	„ 12	7	1	..	..	4 Sept. & 13 Oct. 1864.	
	„ „	..	..	1	..		
	„ 15	3	..	..	..	5 Sept. & 12 Oct. 1864.	

TABLE 13—*continued.*

Lines.	Huts.	Scarlet Fever.		Measles.		Dates of first and last Attacks of Scarlet Fever in each Hut.	Remarks.
		Cases.	Deaths.	Cases.	Deaths.		
E.	No. 17	1	1	..	..	15 Oct. 1864.	
	„ 18	4	..	..	..	27 Aug. 1864 &'19 Jan. 1865.	
	„ 19	2	1	..	..	25 Aug. 1864.	
	„ 20	6	2	..	..	30 Aug. & 31 Oct. 1864.	
	„ 22	1	..	..	..	29 Aug. 1864.	
F.	No. 3	..	..	3	..		
	„ 37	2	..	..	..	3 Dec. 1863.	
G.	No. 1	1	..	..	..	10 March 1865 - - - - -	A woman.
	„ „	..	..	1	..		
	„ 8	1	..	..	..	14 May 1865.	
	„ 12	1	..	..	..	5 June 1865.	
	„ 21	..	..	1	..		
	„ 23	1	..	..	..	7 Dec. 1864.	
H.	No. 5	1	..	..	..	13 May 1865.	
	„ 21	..	..	4	1		
	„ 23	1	..	..	..	4 May 1865.	
	„ 31	1	..	..	..	28 April 1865.	
	„ „	..	..	1	..		
I.	No. 37	..	..	2	..		
K.	No. 1	..	..	2	..		
	„ 14	1	..	..	..	5 June 1865.	
L.	No. 2	..	..	3	..		
	„ 15	1	..	..	..	29 July 1864.	
M.	No. 8	1	..	..	..	17 May 1865.	
	„ 9	1	..	..	..	2 April 1865.	
	„ 13	..	..	1	..		
	„ 15	..	..	1	..		
	„ 16	1	1	..	..	13 Feb. 1865.	
	„ „	..	..	1	1		
	„ 18	1	..	..	..	6 Feb. 1865 - - - - -	A private.
	„ „	..	..	1	..		
	„ 19	1	..	..	..	27 Nov. 1863.	
	„ „	..	..	2	2		
	„ 21	1	..	..	..	4 Dec. 1864.	
N.	No. 17	1	1	..	..	2 June 1865.	
	„ 20	3	1	..	..	15 April & 7 May 1865.	
	„ 22	2	..	..	..	21 June & 11 July 1864.	
	„ 25	1	..	..	..	29 July 1864.	
O.	No. 3	1	1	..	..	9 Aug. 1864.	
	„ „	..	..	2	1		
	„ 5	1	1	..	..	15 April 1865.	
	„ 6	1	..	..	..	21 July 1864.	
	„ 7	1	1	..	..	28 March 1865.	
	„ „	..	..	4	..		
	„ 8	2	..	..	..	13 May & 14 June 1865.	
Q.	No. 8	..	..	1	..		
	„ 23	1	..	..	..	22 April 1865.	
R.	No. 3	1	..	..	..	24 May 1864.	
	„ 22	3	1	..	..	8 & 29 July 1864.	
	„ 24	1	..	..	..	18 June 1864.	
	„ 31	7	..	..	..	24 & 26 May 1865.	
S.	No. 5	2	..	..	..	20 & 21 May 1864.	
	„ 5	..	..	5	3		
X.	No. 2	3	..	..	..	21 May & 7 July 1864.	
	„ 3	3	1	..	..	21 June 1864 & 23 June 1865.	
	„ 5	6	2	..	..	30 June 1864 & 21 May 1865.	
	„ „	..	..	1	..		
Y.	No. 12	2	..	..	..	20 Feb. 1865.	
	„ 21	5	..	..	..	12 Dec. 1864 & 5 Jan. 1865.	
	„ 30	1	..	..	..	11 July 1864.	
Z.	No. 21	..	..	1	..		

TABLE 14.—Showing the total Number of Attacks and Deaths from Scarlet Fever and Measles in each of the Lines of the South Camp, Aldershot.

Lines.	Number of Huts attacked.	Scarlet Fever.		Measles.		Dates of first and last Attack of Scarlet Fever in each Line.	Remarks.
		Cases.	Deaths.	Cases.	Deaths.		
A.	2	1	..	1	..	7 Dec. 1864.	
B.	1	1	..	..	..	25 Aug. 1864.	
D.	1	..	..	2	..		
E.	11	29	6	3	..	25 Aug. & 19 Jan. 1865.	
F.	2	2	..	3	..	3 Dec. 1863.	
G.	5	4	..	2	..	7 Dec. 1864 & 5 June 1865 - -	1 woman.
H.	4	3	..	5	1	28 April & 13 May 1865.	

TABLE 14—*continued.*

Lines.	Number of Huts attacked.	Scarlet Fever.		Measles.		Dates of first and last Attack of Scarlet Fever in each Line.	Remarks.
		Cases.	Deaths.	Cases.	Deaths.		
I.	1	..	..	2	..		
K.	2	1	..	2	..	5 June 1865.	
L.	2	1	..	3	..	29 July 1864.	
M.	8	6	1	6	3	27 Nov. 1863 & 17 May 1865 - -	1 man.
N.	4	7	2	..	..	21 June 1864 & 2 June 1865.	
O.	5	6	3	6	1	21 July 1864 & 14 June 1865.	
Q.	2	1	..	1	..	22 April 1865.	
R.	4	12	1	..	..	24 May 1864 & 26 May 1865.	
S.	2	2	..	5	3	20 & 21 May 1864.	
X.	3	12	3	1	..	21 May 1864 & 21 May 1865.	
Y.	3	8	..	..	..	11 July 1864 & 20 Feb. 1865.	
Z.	1	..	..	1	..		
Totals -	63	96	16	43	8		

TABLE 15.—Showing the Number of Cases and Deaths from Scarlet Fever and Measles among Families living in Permanent Barrack Rooms.

Corps in Occupation.	Room.	Scarlet Fever.		Measles.		Dates of first and last Attack of Scarlet Fever.	Remarks.
		Cases.	Deaths.	Cases.	Deaths.		
Cavalry.							
Not given - -	S. cavalry barracks - -	1	1	..	..	July 1864.	
„ - -	East block - - -	1	..	..	..	15 February 1864.	1 man.
1st Dragoons -	10 room W. cavalry barracks	1	..	..	..	15 May 1864.	
„	9 room east cavalry barracks	1	..	..	..	15 April 1865.	
2nd „ -	1 „ south „ -	1	..	..	..	19 May 1865.	
„ „ -	6 „ „ „ -	2	..	..	..	13Apr.1864&29Mar.1865.	
„ „ -	32 „ „ „ -	1	1	..	..	20 May 1864.	
„ „ -	Mess-man's quarters, back room east cavalry bks.	1	..	..	..	22 June 1864.	
14th Huzzars -	5 room W. cav. bks. up stairs	3	..	..	..	29 Nov. & 29 Dec. 1864	1 woman.
„ „ -	6 „ „ „ -	4	1	..	..	18 Aug. & 29 Nov. 1864	2 women & 1 man.
Artillery.							
Roy. Horse Artill.	2 „ E. inf. bks. „ -	1	1	..	..	26 October 1864 - -	A man.
„	30 „ „ „ east block	..	..	1	..		
„	32 „ „ „ down stairs	2	2	..	..	1 & 4 October 1864.	
„	33 „ „ „ „ -	2	1	..	..	Aug. 28 & Sept. 2, 1864.	
„	35 „ „ „ „ -	1	1	..	..	31 Dec. 1864.	
„	39 „ „ „ - -	..	..	1	..		
„	41 „ „ „ - -	..	..	1	..		
Royal Artillery -	1 „ artillery barrrcks -	..	..	2	..		
„	6 „ „ -	1	1	..	..	25 April 1865.	
„	9 „ „ -	..	..	3	..		
4th Brigade R. A.	4 „ up stairs - -	1	..	..	..	13 August 1864.	
„	5 „ „ - -	5	2	..	..	9 & 27 August 1864.	
„	5 „ down stairs - -	2	..	..	..	7 August 1864.	
„	7 „ up stairs - -	1	..	..	..	15 August 1864.	
„	24 „ down stairs - -	1	..	..	..	24 August 1864.	
9th „	1 „ artillery barracks -	1	..	..	..	19 February 1865.	
„	2 „ „ up stairs -	2	..	..	..	22 Jan. & 21 Feb. 1865	2 men.
„	7 „ „ „ -	2	2	4	..	19 & 22 Feb. 1865.	
„	30 „ centre bks. dwn stairs	3	1	..	..	30 December 1864.	
„	31 „ centre inf. bks. „ -	12	3	..	..	23Nov.1864 &30Jan.1865.	
„	39 „ centre bloek up stairs	1	..	..	..	26 Jan. 1865.	
„	39 „ inf. bks. down stairs	1	1	..	..	26 Jan. 1865 - -	A man.
„	40 „ centre inf. bks. up strs	1	1	..	..	2 February 1865.	
„	41 „ „ „ „ -	1	..	..	..	1 February 1865 - -	A woman.
Infantry.							
1/13th Regiment	10 „ west block - -	1	..	..	..	19 May 1865.	
„	15 „ „ - -	1	..	..	..	19 March 1865.	
„	17 „ „ - -	..	..	1	..		
„	24 „ „ - -	1	..	..	..	19 June 1865.	
1/14th Regiment	15 „ east inf. bks. - -	1	..	5	1	9 April 1865.	
„	17 „ „ - -	..	..	2	..		
„	33 „ „ - -	..	..	1	..		
„	49 „ „ - -	..	..	1	..		
„	52 „ „ - -	1	..	3	..	13 March 1865.	
„	55 „ „ - -	3	1	2	..	3 & 21 May 1865.	
„	53 „ „ - -	1	..	..	..	29 April 1865 - -	A woman.
62nd Regiment -	3 „ centre inf. bks. -	1	..	1	..	22 April 1865.	
„ -	4 „ „ - -	1	..	1	..	24 August 1864.	
„ -	5 „ „ - -	1	..	..	..	25 August 1864 - -	A man.
„ -	6 „ „ - -	1	..	..	..	4 September 1864 -	A man.

TABLE 15—*continued.*

Corps in Occupation.	Room.	Scarlet Fever. Cases.	Scarlet Fever. Deaths.	Measles. Cases.	Measles. Deaths.	Date of first and last Attack of Scarlet Fever.	Remarks.
62nd Regiment -	8 room centre bks. - -	1	1	1	..	23 April 1865.	
,, -	10 ,, ,, up stairs	1	..	..	..	30 August 1864 - -	A man.
,, -	17 ,, ,, - -	1	..	..	..	14 September 1864 -	A man.
,, -	40 ,, centre bks. - -	1	..	..	..	2 June 1865 - -	A woman.
,, -	53 ,, ,, - -	1	..	..	..	20 May 1865.	
66th Regiment -	35 room W. block inf. bks.	..	..	1	..		
Not given - -	Centre block - - - -	1	..	..	..	23 October 1863.	
	Totals - -	76	21	31	1		

TABLE 16.—Showing the Number of Cases and Deaths from Scarlet Fever and Measles among Families living in Permanent Married Quarters.

Corps in Occupation.	Room.	Scarlet Fever. Cases.	Scarlet Fever. Deaths.	Measles. Cases.	Measles. Deaths.	Date of first and last Attack of Scarlet Fever.	Remarks.
Not given - -	6 room W. cavalry bks. -	1	..	..	..	24 May 1864.	
,, -	10 ,, ,, - -	1	..	..	..	15 May 1864.	
,, -	16 ,, ,, - -	2	1	..	..	12 & 18 May 1864.	
,, -	32 ,, E. ,, - -	1	..	..	..	25 June 1864.	
Cavalry.							
2nd Dragoons -	1 room S. cavalry bks. -	2	2	..	..	7 April 1865.	
,, -	6 ,, ,, up stairs	2	..	..	..	14 & 27 October 1864.	
,, -	27 ,, ,, down stairs	1	1	..	..	20 February 1865.	
5th Lancers -	2 ,, A. pass. centre bks.	..	..	1	..		
14th Hussars -	3 ,, W. cav. bks. up stairs	1	..	..	..	2 March 1865.	
,, -	6 ,, ,, ,, -	1	..	..	..	28th February 1865.	
,, -	17 ,, ,, down stairs -	2	..	..	..	2 & 27 December 1864.	
Artillery.							
Roy. Horse Artill.	1 room A. pass. centre inf. bks.	1	..	..	..	6 May 1865.	
,,	G. pass. E. inf. bks. down stairs	1	..	..	..	28 August 1864.	
,,	H. ,, ,, ,,	2	1	..	..	4 & 7 September 1864.	
Royal Artillery -	6 room B. pass. - - -	1	1	..	..	28 July 1864.	
9th Brigade R.A.	2 room down stairs Artil. bks.	2	1	..	..	24 January 1865.	
,,	2 ,, B. pass. R. A. Md. Qrs.	2	..	..	..	14 & 21 November 1864.	
,,	3 ,, ,, ,, -	1	..	..	..	21 January 1865.	
,,	7 & 8 ,, ,, -	1	..	..	..	19 August 1864.	
,,	3 ,, C. ,, ,, -	2	..	..	..	21 Jan. & 21 Feb. 1865.	
,,	4 ,, B. ,, ,, -	1	..	..	..	23 January 1865.	
Infantry.							
1/13th Regiment	1 room C. pass. W. inf. bks.	..	..	1	..		
,,	1 ,, F. ,, ,, -	..	..	1	..		
,,	1 & 3 rooms G. pass ,, -	1	..	..	..	6 May 1865.	
,,	2 room F. pass. ,, -	1	..	..	..	26 May 1865.	
,,	5 ,, A. ,, ,, -	1	..	..	..	3 May 1865.	
,,	6 & 7 rooms G. pass. ,, -	1	..	..	..	7 May 1865.	
,,	8 room G. pass. ,, -	2	..	..	..	27 April & 1 May 1865.	
1/14th Regiment	1 ,, B. ,, E. inf. bks.	..	..	1	..		
,,	3 ,, F. ,, ,, -	2	..	..	..	14 September 1864 & 12 May 1865.	
,,	5 ,, C. ,, ,, -	1	..	..	..	19 May 1865.	
,,	7 ,, F. ,, ,, -	..	..	1	..		
,,	7 & 8 rooms B. pass. ,, -	1	..	..	..	1 October 1864.	
,,	7 & 8 ,, D. ,, -	2	..	..	..	13 Sept. & 1 Oct. 1864.	
62nd Regiment -	1 & 2 ,, E. ,, Md. Qrs. centre inf. bks. -	1	..	..	..	30 April 1865.	
,,	1 & 2 rooms F. pass. ,, -	..	..	1	..		
,,	2 room D. ,, ,, -	..	..	1	..		
,,	3 ,, B. ,, ,, -	1	..	..	..	6 May 1865.	
,,	4 ,, A. ,, ,, -	1	..	..	..	28 August 1864 - -	A woman.
,,	4 ,, D. ,, ,, -	..	..	1	..		
,,	4 ,, F. ,, ,, -	..	..	2	..		
,,	4 ,, G. ,, ,, -	1	..	..	..	29 April 1865.	
,,	6 & 7 rooms E. pass. ,, -	2	..	..	..	30 April & 29 May 1865.	
,,	7 room G. ,, ,, -	1	..	..	..	19 May 1865.	
,,	7 & 8 rooms C. ,, ,, -	..	..	1	..		
,,	6 room ,, ,, ,, -	1	..	..	..	22 April 1865.	
,,	E. pass. ,, -	1	..	..	..	19 April 1865.	
	Totals - -	49	7	11	..		

TABLE 17.—Showing the Number of Cases and Deaths from Scarlet Fever and Measles in *Temporary Camps* (Families tented out), *Hospitals, Canteens,* and *Schools.*

Nature of Accommodation and Corps in Occupation.	Room, &c.	Scarlet Fever.		Measles.		Date of first and last Attack of Scarlet Fever.	Remarks.
		Cases.	Deaths.	Cases.	Deaths.		
Temporary Camps. Families tented out.							
Royal Artillery -	Tents "Redan Hill" Encampnt	.	.	1	.		
Military Train -	„ "Iron Church Camp"	5	.	.	.	7 & 23 June 1865.	
1/13th Regiment	„ "Windy Gap Hill" -	6	1	.	.	9 & 21 May 1865.	
62nd Regiment -	„ „ -	5	.	.	.	18 May & 1 June 1865.	
1/14th Regiment	„ "Cove Common" -	2	.	.	.	19 June 1865.	
21st Regiment -	„ "Jersey Cottage" -	1	.	.	.	16 June 1865.	
Hospitals.							
Roy. Horse Artill.	Children's Hospital - -	1	.	.	.	19 January 1865.	
2nd Dragoons -	6 Ward Union hospital -	1	.	.	.	7 January 1865 - -	A man.
1/14th Regiment	Hospital hut V. lines S. Camp	1	.	.	.	28 August 1864 - -	A man.
1/21st Regiment	Women's hospital - -	1	.	.	.	17 April 1865 - -	A woman.
59th Regiment -	„ - -	1	1	.	.	8 March 1865.	
62nd Regiment -	„ - -	1	.	.	.	26 March 1865.	
Canteens.							
Not known -	Hospital canteen V. lines S. Camp.	1	.	.	.	18 June 1864.	
62nd Regiment -	Canteen centre block - -	2	.	.	.	9 March & 23 May 1865	1, a woman.
92nd Regiment -	B. canteen S. Camp - -	3	.	.	.	4 & 14 May 1865.	
Schools.							
Not known	School room T. lines S. Camp	.	.	1	.		
„ -	„ centre blocks -	.	.	1	.		
	Totals - -	31	2	3	.		

TABLE 18.—Showing the Number of Cases and Deaths from Scarlet Fever and Measles in *Miscellaneous Classes of Accommodation.*

Corps in Occupation.	Room, &c.	Scarlet Fever.		Measles.		Date of first and last Attack of Scarlet Fever.	Remarks.
		Cases.	Deaths.	Cases.	Deaths.		
Roy. Horse Artill.	"New Town" (out of bks.)	1	..	..	..	1 September 1864.	
Roy. Engineers -	Telegraph hut Q. lines S. cp.	1	..	2	..	12 May 1865.	
1st Dragoons -	"Out of Barracks" - -	1	..	..	..	14 August 1864.	
14th Hussars -	4, Westbourne Terrace -	1	..	..	..	18 May 1865.	
Mily. Train -	Anderson's Cottage - -	1	..	..	..	14 June 1865.	
„ -	Waterloo Road - - -	1	..	..	..	15 June 1865.	
1/13th Regiment	Winchester Villa, Victoria Rd.	2	..	..	..	21 April 1865.	
62nd „ -	62, Westbourne Terrace -	1	..	..	..	21 May 1865.	
75th „ -	"Hut not known" - -	..	..	1	..		
85th „ -	Govt. House, "New Town"	..	..	1	..		
Store Department	1, Victoria Road - -	1	..	1	..	27 June 1865.	
Barrack „ -	1 hut rear of bk. stores, S. Camp - - -	2	..	..	..	2 May 1864 & 14 June 1865.	1, a woman.
„ „ -	2 „ „ „ „ „	1	..	..	..	5 May 1865.	
„ „ -	1 „ (Bk. Sergts.) near Pavilion Hotel - -	1	..	..	..	17 July 1864.	
Not known -	Officers' Mess Kitchen, S. lines, S. Camp - -	1	..	..	..	20 May 1864.	
„ -	2 Servant's Kitchen, V. lines S. Camp - - -	1	..	..	..	14 July 1864.	
„ -	Cottage (Engineers') near Pavilion Hotel - -	1	..	..	..	24 May 1864.	
„ -	Villa in Victoria Road -	1	1	..	..	7 July 1864.	
Civilian - -	Govt. House, "New Town"	..	..	1	..		
	Totals - -	18	1	6	..		

TABLE 19.—Of the Dates and Intervals in Days between consecutive Attacks occurring among the first 55 Cases of Scarlet Fever in Aldershot Camp.

Nature of Accommodation.	Total Cases.	Succession of Cases.	Dates of Cases.	Intervals between Cases in Days.
Married quarters, W. cavalry barracks, 16 room.	2	1st	12 May 1864.	..
		2nd	18 „ „	6
North Camp.				
No. 20 hut, L. lines -	2	1st	3 July 1864.	..
		2nd	5 „ „	2
South Camp.				
No. 37 hut, F. lines -	2	1st	3 Dec. 1863	Same day.
		2nd		
„ 22 „ N. „ -	2	1st	21 June 1864.	..
		2nd	11 July 1864	20
„ 22 „ R. „ -	3	1st	8 July 1864.	..
		2nd	23 „ „	15
		3rd	29 „ „	6
„ 3 „ S. „ -	2	1st	20 May 1864.	..
		2nd	21 „ „	1
„ 2 „ X. „ -	3	1st	21 May 1864.	..
		2nd	30 June 1864	40
		3rd	7 July 1864	7
„ 3 „ „ „ -	2	1st	21 June 1864.	..
		2nd	7 July 1864	16
F. O. Qr. R. „ -	2	1st	23 June 1864.	..
		2nd	1 July 1864	8
Officer's hut, R. „ -	4	1st		
		2nd	4 May 1864.	..
		3rd		
		4th	6 „ „	2
2 Officer's hut, S. lines -	2	1st	24 June 1864.	..
		2nd	7 July 1864	13

TABLE 20.—Showing the total Number of Cases of Scarlet Fever which occurred in all Classes of Married Accommodation at Aldershot between October 23rd, 1863, and June 30th, 1865, together with the Numbers of Huts and Rooms which yielded single and multiple Cases of the Disease.

Cases per Hut or Room.	One.			Two.			Three.			Four.			Five.			Six.			Seven.			Twelve.		
	Huts or Rooms.	Cases.	Deaths.	Huts or Rooms.	Cases.	Deaths.	Huts or Rooms.	Cases.	Deaths.	Huts or Rooms.	Cases.	Deaths.	Huts or Rooms.	Cases.	Deaths.	Huts or Rooms.	Cases.	Deaths.	Huts or Rooms	Cases.	Deaths.	Huts or Rooms.	Cases.	Deaths.
Huts, North Camp - -	22	22	6	3	6	2	1	3	1	1	4	1	.	.	.	.	.	.	.	.	.	.	.	.
Huts, South Camp - -	30	30	6	8	16	2	5	15	3	1	4	.	1	5	.	2	12	4	2	14	1	.	.	.
Permanent barrack rooms -	33	33	8	6	12	5	3	9	2	1	4	1	1	5	2	.	.	.	.	.	.	1	12	3
Permanent married quarters -	26	26	2	12	24	5	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Officers' quarters - -	.	.	.	3	6	2	.	.	.	2	8	1	.	.	.	.	.	.	1	7	.	.	.	.
Miscellaneous - - -	14	14	1	2	4	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
N. C. O.'s quarters - -	2	2	.	1	2	.	1	3	3	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Total - -	127	127	23	35	70	16	10	30	9	5	20	3	2	10	2	2	12	4	3	21	1	1	12	3

TABLE 21.—Showing the Number of Rooms and Huts in which there were single and multiple simultaneous Attacks of Scarlet Fever.

With no more than one Case per Room or Hut.		Two simultaneous Cases.		Three simultaneous Cases.		Four simultaneous Cases.	
Rooms or Huts.	Total Cases.	Rooms or Huts.	Total Cases.	Rooms or Huts.	Total Cases.	Rooms or Huts.	Total Cases.
127	127	14	28	6	18	3	12

TABLE 22.—Showing the Number of Days intervening between consecutive Cases of Scarlet Fever in the same Room or Hut in the various Classes of Married Quarters at Aldershot.

Nature of Accommodation.	Total Cases.	Succession of Cases.	Dates of Cases.	Intervals between Cases in Days.
North Camp.				
No. 2 hut, B. lines - - -	2	1st	18 November 1864.	
		2nd	30 May 1865	193
„ 1 „ C. „ - - -	4	1st		
		2nd	31 October 1864	Same day.
		3rd		
		4th		
„ 31 „ H. „ - -	2	1st	17 October 1864.	
		2nd	13 January 1865	88
„ 20 „ L. „ - -	2	1st	3 July 1864.	
		2nd	5 „ „	2
„ 40 „ M. „ - - -	3	1st	20 November 1864.	
		2nd	23 November 1864	3
		3rd	5 December 1864	12
South Camp.				
„ 4 hut, E. lines - -	2	1st	13 November 1864	Same day.
		2nd		
„ 10 „ „ - - -	2	1st	6 September 1864	
		2nd	21 „ „	15
„ 12 „ „ - -	7	1st	4 „ „	
		2nd		
		3rd	5 „ „	1
		4th		
		5th	6 „ „	1
		6th	9 October 1864	33
		7th	13 „ „	4
„ 15 „ „ -	3	1st	5 September 1864.	
		2nd	10 „ „	5
		3rd	12 October 1864	32
„ 18 „ „ - - -	4	1st	27 August 1864.	
		2nd	13 October 1864	47
		3rd	10 November 1864	28
		4th	19 January 1865	70
„ 19 „ „ - - -	2	1st	25 August 1864	Same day.
		2nd		
„ 20 „ „ - - -	6	1st		
		2nd	30 „ „	Same day.
		3rd		
		4th	2 September 1864	3
		5th	4 „ „	2
		6th	31 October 1864	57
„ 37 „ F. „ - - -	2	1st	3 December 1863	Same day.
		2nd		
„ 20 „ N. „ - - -	3	1st	15 April 1865.	
		2nd	4 May 1865	19
		3rd	7 „ „	3
„ 22 „ „ - - -	2	1st	21 June 1864.	
		2nd	11 July 1864	20
„ 8 „ O. „ - - -	2	1st	13 May 1865.	
		2nd	14 June 1865	32
„ 22 „ R. „ - - -	3	1st	8 July 1864.	
		2nd	23 „ „	15
		3rd	29 „ „	6
„ 31 „ „ - - -	7	1st		
		2nd	24 May 1865.	
		3rd		
		4th		
		5th	25 „ „	1
		6th		
		7th	26 „ „	1
„ 3 „ S. „ - - -	2	1st	20 „ 1864.	
		2nd	21 „ „	1
„ 2 „ X. „ - - -	3	1st	21 „ „	
		2nd	30 June 1864	40
		3rd	7 July 1864	7
„ 3 „ „ - - -	3	1st	21 June 1864.	
		2nd	7 July 1864	16
		3rd	23 June 1865	351
„ 5 „ „ - - -	6	1st	30 June 1864.	
		2nd	27 April 1865	301

TABLE 22—*continued.*

Nature of Accommodation.	Total Cases.	Succession of Cases.	Dates of Cases.	Intervals between Cases in Days.
South Camp—continued.				
No. 5 hut, X. lines - - -		3rd 4th	8 May 1865	11
		5th	15 „ „	7
		6th	21 „ „	6
„ 12 „ Y. lines - -	2	1st 2nd	20 February 1865	Same day.
„ 21 „ „ - -	5	1st 2nd 3rd 4th	12 December 1864	Same day.
		5th	5 January 1865	24
Permanent Barrack Rooms.				
„ 6 barrack room, S. cavalry barracks -	2	1st	13 April 1864.	
		2nd	29 March 1865	351
„ 6 barrack room, W. cavalry barracks -	4	1st	18 August 1864.	
		2nd	6 September 1864	19
		3rd	18 „ „	12
		4th	29 November 1864	72
„ 5 room „ „ -	3	1st	29 „ „	
		2nd	1 December 1864	2
		3rd	29 „ „	28
„ 32 „ E. infantry - - -	2	1st	1 October 1864.	
		2nd	4 „ „	3
„ 33 „ „ - - -	2	1st	28 August 1864.	
		2nd	2 September 1864	5
„ 5 barrack room, artillery bks., up stairs	5	1st 2nd	9 August 1864	Same day.
		3rd 4th	11 „ „	2
		5th	27 „ „	16
„ 5 „ „ down stairs	2	1st 2nd	7 August 1864	Same day.
„ 2 „ „ up stairs	2	1st	22 January 1865.	
		2nd	21 February 1865	30
„ 7 „ „ „ -	2	1st	19 „ „	
		2nd	22 „ „	3
„ 30 bk. room, centre inf. bks. down stairs	3	1st 2nd 3rd	30 December 1864	Same day.
„ 31 „ „ „	12	1st	23 November 1864.	
		2nd	12 December 1864	19
		3rd	28 „ „	16
		4th	30 „ „	2
		5th 6th 7th	1 January 1865	2
		8th 9th 10th	11 „ „	10
		11th	18 „ „	7
		12th	30 „ „	12
„ 55 room, E. infantry barracks - -	3	1st	3 May 1865.	
		2nd	13 „ „	10
		3rd	21 „ „	8
Permanent Married Quarters.				
„ 8 room, G. passage, west block -	2	1st	27 April 1865.	
		2nd	1 May 1865	4
„ 3 „ F. pass. inf. bks. down stairs	2	1st	14 September 1864.	
		2nd	12 May 1865	240
„ 7 & 8 D. passage, up stairs - -	2	1st	13 September 1864.	
		2nd	1 October 1864	18
„ 6 & 7 E. passage, centre inf. bks. -	2	1st	30 April 1865.	
		2nd	29 May 1865	29
„ 16 room, cavalry barracks - -	2	1st	12 May 1864.	
		2nd	18 „ „	6
„ 1 „ S. cavalry barracks - -	2	1st 2nd	7 April 1865	Same day.
„ 6 „ „ „ „ up stairs	2	1st	14 October 1864.	
		2nd	27 „ „	13

TABLE 22—*continued.*

Nature of Accommodation.	Total Cases.	Succession of Cases.	Dates of Cases.	Intervals between Cases in Days.
Permanent Married Quarters—continued.				
No. 17 room, W. cavalry bks., down stairs	2	1st	2 December 1864.	
		2nd	27 „ „	25
H. passage, artillery barracks	2	1st	4 September 1864.	
		2nd	7 „ „	3
„ 2 „ artillery barracks, down stairs	2	1st 2nd	24 January 1865	Same day.
„ 2 „ „ „ B. passage	2	1st	14 November 1864.	
		2nd	21 „ „	7
„ 3 „ „ „ C. „	2	1st	21 January 1865.	
		2nd	21 February 1865	31
Officers' Quarters.				
F. O. Qrs., V. lines, S. Camp	2	1st	1 April 1865.	
		2nd	7 „ „	6
Staff quarters, Q. lines -	4	1st	29 March 1865.	
		2nd	2 April 1865	4
		3rd	14 „ „	12
		4th	15 „ „	1
„ 3 „ Staff qrs., cavalry barracks -	2	1st 2nd	28 February 1865	Same day.
Officer's hut, R. lines, S. Camp	4	1st 2nd 3rd	4 May 1864	Same day.
		4th	6 „ „	2
Field officers' quarters „ -	2	1st	23 June 1864.	
		2nd	1 July 1864	8
„ 2 „ Officer's hut, S. lines, „ -	2	1st	24 June 1864.	
		2nd	7 July 1864	13
„ 2 „ Staff qrs., W. infantry barracks	7	1st	1 March 1865.	
		2nd	2 „ „	1
		3rd 4th	3 „ „	1
		5th	6 May 1865	64
		6th	10 „ „	4
		7th	16 „ „	6
Non-Commissioned Officers' Quarters.				
Stewards' qrs. new hospital hut	3	1st	15 August 1864.	
		2nd	24 „ „	9
		3rd	26 April 1865	245
Miscellaneous.				
Winchester villa - -	2	1st 2nd	21 April 1865	Same day.
„ 1 hut, rear of barrack stores, S. Camp	2	1st	2 May 1864.	
		2nd	14 June 1865	408

TABLE 23.—Showing Intervals between successive Attacks of Scarlet Fever in the same Hut or Room.

Interval in Days between consecutive Attacks.	Number of Instances.	Number of Cases.	Remarks.	Interval in Days between consecutive Attacks.	Number of Instances.	Number of Cases.
1	8	12		28	2	2
2	7	10		29	1	1
3	6	6		30	1	1
4	4	4		31	1	1
5	2	2		32	2	2
6	5	5		33	1	1
7	4	4		40	1	1
8	2	2		47	1	1
9	1	1		57	1	1
10	2	4		64	1	1
11	2	3		70	1	1
12	4	4		72	1	1
13	2	2		88	1	1
15	2	2		193	1	1
16	3	3		240	1	1
18	1	1		245	1	1
19	3	3		301	1	1
20	1	1		351	2	2
24	1	1		409	1	1
25	1	1				

TABLE 24.—Showing Dates and Localities of Cases of Measles at Aldershot.

Date.	Hut or Room attacked.	Measles.	
		Cases.	Deaths.
1865.			
Feb. 2	13 hut, M. lines, S. Camp	1	..
„ 13	18 „ „ „	1	..
„ 16	15 „ „ „	1	..
„ 17	5 „ S. „ „	3	1
„ 18	16 „ M. „ „	1	1
„ 19	5 „ S. „ „	2	2
„ 27	19 „ M. „ „	1	1
„ 28	19 „ „ „	1	1
March 3	21 „ H. „ „	1	1
„ 11	21 „ „ „	1	..
„ 12	21 „ Z. „ „	1	..
„ 18	Government House, New Town	1	..
„ 21	21 hut, H. lines, S. Camp	1	..
„ 21	7 „ O. „ „	1	..
„ 22	21 „ H. „ „	1	..
„ 22	15 barrack room, east, infantry barracks	1	..
„ 27	9 „ artillery barracks	1	..
„ 29	9 „ „	1	..
„ 29	"Hut, not known"	1	..
„ 31	7 barrack room, artillery barracks	1	..
April 1	„ „	1	..
„ 3	7 hut, O. lines, S. Camp	1	..
„ 3	3 „ „ „	1	..
„ 4	3 „ „ „	1	1
„ 4	3 „ F. „ „	2	..
„ 5	7 „ O. „ „	2	..
„ 6	1 „ D. „ „	1	..
„ 7	15 barrack room, E. block, infantry barracks	2	1
„ 8	52 „ „ „	1	..
„ 8	4 „ centre block	1	..
„ 8	Government House, New Town	1	..
„ 9	15 barrack room, E. block, infantry barracks	1	..
„ 11	Hospital Serjeants' quarters, V. lines, S. Camp	1	..
„ 11	31 hut, H. lines, S. Camp	1	..
„ 11	21 „ G. „ „	1	..
„ 13	52 barrack room, E. infantry barracks	1	..
„ 14	„ „	1	..
„ 14	7 „ artillery barracks	1	..

TABLE 24—*continued.*

Date.	Hut or Room attacked.	Measles.	
		Cases.	Deaths.
1865.			
April 15 - -	3 hut, F. lines, S. Camp - - - - -	1	..
„ 15 - -	12 „ E. „ „ - - - - -	1	..
„ 15 - -	9 „ E. „ „ - - - - -	2	..
„ 17 - -	3 barrack room, centre, infantry barracks - -	1	..
„ 17 - -	37 hut, I. lines, S. Camp - - - - -	1	..
„ 18 - -	8 barrack room, centre, infantry barracks - -	1	..
„ 18 - -	1 hut, G. lines, S. Camp - - - - -	1	..
„ 18 - -	F. passage, M. S. quarters, W. infantry barracks - -	1	..
„ 19 - -	1 room, B. passage, M. S. quarters, E. infantry barracks -	1	..
„ 19	37 hut, I. lines, S. Camp - - - - -	1	..
„ 19	1 „ K. „ „ - - - - -	1	..
„ 20	9 barrack room, artillery barracks - - -	1	..
„ 20 - -	15 „ E. infantry barracks - - -	1	..
„ 21 - -	1 hut, D. lines, S. Camp - - - - -	1	..
„ 22 - -	"Telegraph hut," Q. lines, S. Camp - - -	1	..
„ 22 - -	7 barrack room, artillery barracks - - -	1	..
„ 22 - -	8 hut, Q. lines, S. Camp - - - - -	1	..
„ 22 - -	4 room, D. passage, M. S. qrs., centre infantry barracks -	1	..
„ 22 - -	5 hut, X. lines, S. Camp - - - - -	1	..
„ 22 - -	2 room, Staff quarters, W. infantry barracks - -	1	..
„ 22 - -	55 barrack room, E. infantry barracks - - -	1	..
„ 22 - -	2 room, D. passage, M. S. qrs., centre infantry barracks -	1	..
„ 22 - -	Telegraph hut, Q. lines, S. Camp - - - -	1	..
„ 23 - -	1 room, C. passage, M. S. quarters, W. infantry barracks -	1	..
„ 23 - -	1 hut, K. lines, S. Camp - - - - -	1	..
„ 23 - -	4 room, F. passage, M. S. qrs., centre infantry barracks -	1	..
„ 24 - -	3 Officer's hut, S. lines, S. Camp - - - -	1	..
„ 24 - -	2 room, A. passage, M. S. quarters, centre barracks -	1	..
„ 25 - -	7 & 8 room, C passage „ „ -	1	..
„ 27 - -	7 room, F. passage, M. S. quarters, E. block - -	1	..
„ 30 - -	1 & 2 rooms, F. pass., M. S. qrs., centre infantry barracks	1	..
„ 30 - -	32 hut, C. lines, N. Camp - - - - -	1	..
May 2 - -	33 barrack room, E. infantry barracks - - -	1	..
„ 2 - -	3 Officer's hut, S. lines, S. Camp - - - -	1	..
„ 3 - -	„ „ - - - -	1	..
„ 4 - -	55 barrack room, E. infantry barracks - - -	1	..
„ 4 - -	17 „ E. block - - - - -	1	..
„ 4 - -	3 Officer's hut, S. lines, S. Camp - - - -	1	..
„ 4 - -	1 „ R. „ - - - -	1	..
„ 8 - -	41 barrack room, E. infantry barracks - - -	1	..
„ 8 - -	Tents, Redan Hill encampment - - - -	1	..
„ 8 - -	4 room, F. passage, M. S. qrs., centre infantry barracks -	1	..
„ 9 - -	35 barrack room, W. block, infantry barracks - -	1	..
„ 9 - -	1 „ artillery barracks - - -	2	..
„ 9 - -	39 „ E. infantry barracks - - -	1	..
„ 15 - -	17 „ „ - - -	1	..
„ 17 - -	49 „ „ - - -	1	..
„ 18 - -	37 hut, B. lines, & 24 hut, A. lines, S. Camp - -	1	..
„ 19 - -	21 „ I. „ N. Camp - - - -	1	..
„ 19 - -	30 barrack room, E. block, permanent barracks - -	1	..
„ 21 - -	17 „ W. „ „ - -	1	..
„ 30 - -	1 Victoria Road - - - - -	1	..
June 8 - -	1 Officer's hut, T. lines, S. Camp - - - -	2	..
„ 9 - -	Commander-in-Chief's hut - - - - -	1	..
„ 10 - -	R. E. hut, Avenue Road - - - - -	1	..
„ 11 - -	Military Stores - - - - - -	1	..
„ 14 - -	R. E. hut, Avenue Road - - - - -	1	..
„ 16 - -	„ „ - - - - -	1	..
„ 20 - -	1 Officer's hut, T. lines, S. Camp - - - -	4	..
„ 25 - -	2 hut, L. lines, S. Camp - - - - -	3	..
„ 25 - -	School-room, T. lines, S. Camp - - - -	1	..
„ 25 - -	„ centre block - - - - -	1	..

TABLE 25.—Showing the Number of Rooms and Huts in which there were single and multiple Attacks of Measles.

Number of Rooms and Huts with no more than One Case of Measles per Room or Hut.	Rooms or Huts with more than One Case per Room or Hut.	
	Number of Rooms or Huts.	Number of Cases per Room or Hut.
43	12	2
	5	3
	4	4
	2	5
	1	6

TABLE 26.—Showing the Number of Rooms and Huts in which there were single and multiple simultaneous Attacks of Measles.

With no more than one Case per Room or Hut.		Two simultaneous Cases.		Three simultaneous Cases.		Four simultaneous Cases.	
Rooms or Huts.	Total Cases.	Rooms or Huts.	Total Cases.	Rooms or Huts.	Total Cases.	Rooms or Huts.	Total Cases.
43	43	8	16	2	6	1	4

TABLE 27.—Showing the Number of Days intervening between consecutive Cases of Measles in the same Room or Hut in the various Classes of Married Quarters at Aldershot.

Nature of Accommodation.	Total Cases.	Succession of Cases.	Dates of Cases.	Intervals between Cases in Days.
South Camp.				
1 hut, D. lines - - - - -	2	1st	6 April 1865.	
		2nd	21 „	15
9 „ E. „ - - - - -	2	1st	15 „	Same day.
		2nd		
3 „ F. „ - - - - -	3	1st	4 „	Same day.
		2nd		
		3rd	15 „	11
21 „ H. „ - - - - -	4	1st	3 March 1865.	
		2nd	11 „	8
		3rd	21 „	10
		4th	22 „	1
37 „ I. „ - - - - -	2	1st	17 April 1865.	
		2nd	19 „	2
1 „ K. „ - - - - -	2	1st	19 „	
		2nd	23 „	4
2 „ L. „ - - - - -	3	1st		
		2nd	25 June 1865.	Same day.
		3rd		
19 „ M. „ - - - - -	2	1st	27 February 1865.	
		2nd	28 „	1
3 „ O. „ - - - - -	2	1st	3 April 1865.	
		2nd	4 „	1
7 „ „ „ - - - - -	4	1st	21 March 1865.	
		2nd	3 April 1865	13
		3rd	5 „	2
		4th		
5 „ S. „ - - - - -	5	1st		
		2nd	17 February 1865	Same day.
		3rd		
		4th	19 „	2
		5th		

TABLE 27—*continued.*

Nature of Accommodation.	Total Cases.	Succession of Cases.	Dates of Cases.	Intervals between Cases in Days.
Permanent Barrack Rooms.				
1 room, artillery barracks - - -	2	1st 2nd	9 May 1865	Same day.
7 „ „ „ - - -	4	1st	31 March 1865.	
		2nd	1 April 1865	1
		3rd	14 „	13
		4th	22 „	8
9 „ „ „ - - -	3	1st	27 March 1865.	
		2nd	29 „	2
		3rd	20 April 1865	22
15 „ E. infantry barracks - -	5	1st	22 March 1865.	
		2nd 3rd	7 April 1865	16
		4th	9 „	2
		5th	20 „	11
17 „ „ „ - -	2	1st	4 May 1865.	
		2nd	15 „	11
52 „ „ „ - -	3	1st	8 April 1865.	
		2nd	13 „	5
		3rd	14 „	1
55 „ „ „ - -	2	1st	22 „	
		2nd	4 May 1865	12
Permanent Married Quarters.				
4 „ F. pass., centre infantry bks. -	2	1st	23 April 1865.	
		2nd	8 May 1865	15
Officers' Quarters.				
3 Officer's hut, S. lines, S. camp - -	4	1st	24 April 1865.	
		2nd	2 May 1865	8
		3rd	3 „	1
		4th	4 „	1
1 Officer's hut, T. lines, S. camp - -	6	1st 2nd	8 June 1865	Same day.
		3rd 4th 5th 6th	20 „	12
Miscellaneous.				
Government House, New Town - -	2	1st	18 March 1865.	
		2nd	8 April 1865	21
Telegraph hut, Q. lines, S. camp - -	2	1st 2nd	22 „	Same day.
R.E. hut, Avenue Road - - -	3	1st	10 June 1865.	
		2nd	14 „	4
		3rd	16 „	2

TABLE 28.—Showing Intervals between successive Attacks of Measles in the same Hut or Room.

Interval in Days between consecutive Attacks.	Number of Instances.	Number of Cases.
1	7	7
2	6	8
4	2	2
5	1	1
8	3	3
10	1	1
11	2	2
12	1	1
13	3	6
15	3	3
16	1	2
21	1	1
22	1	1

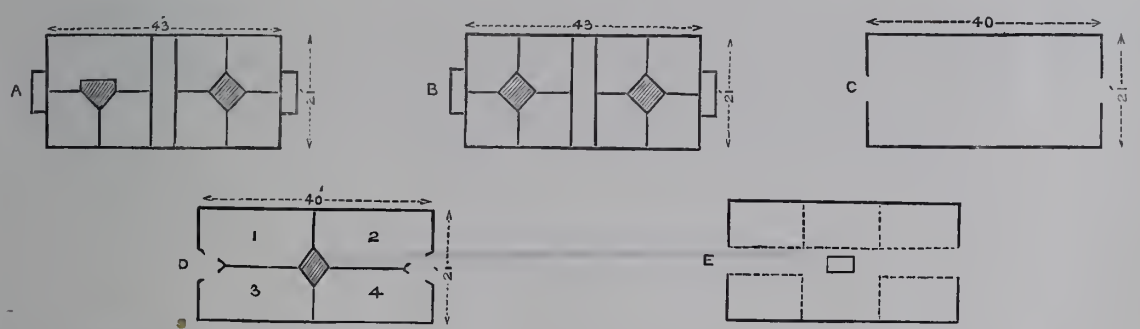
TABLE 29.—Showing Number of Rooms and Huts in which there were single and multiple First Attacks of Scarlet Fever.

Number of Rooms and Huts with no more than One Case of Scarlet Fever per Room or Hut.	Rooms with more than One Case per Room on the First Day when the Room or Hut, &c. was attacked.	
	Number of Rooms.	Number of Cases per Room.
127	10	2
	3	3
	3	4

TABLE 30.—Showing the Cubic Content and Superficial Area of the Huts at the S. Camp Aldershot affected with Scarlet Fever, furnished by Lieut.-Colonel G. Graham, Commanding Royal Engineer.

Aldershot, 19th April 1865.

Description of Hut.	Cubic Content.	Superficial Area.	No. of Occupants.
Reference:—	Feet.	Feet.	
A.—F.O. hut - Living room	1,415	185	
A.—F.O. hut - Bed room -	716	90	
B.—Officer's hut Living room	716	90	Usual quarters for a single officer.
B.—Officer's hut Bed room -	716	90	
C.—Soldiers' hut - - -	5,818	760	22 by construction.
D.—Married do. - - -	1,358	175	One family.
E.—Do. do. - - -	1,163	127	Do.



Reference A.—F.O. hut.
B.—Officers' hut.
C.—Soldiers' hut.
D.—Married soldiers' hut with brick chimney and wooden partitions.
E.—Married soldiers' hut with canvas curtains, and stove with hot plate.
1, 2, 3, 4, contain 1,358 cubic feet each.
" " 175 superficial area ditto.

TABLE 31.—Showing the average Strength, total Number of Deaths, and Rates per 1,000 of Men, Women, and Children stationed at Aldershot, from 1859 to 1864 inclusive, (furnished by Inspector-General of Hospitals, T. Ross Jameson, M.D.)

Aldershot, 20th May 1865.

Year.	Men.			Women.			Children.		
	Average annual Strength.	Total No. of Deaths.	Ratio per 1,000.	Average annual Strength.	Total No. of Deaths.	Ratio per 1,000.	Average annual Strength.	Total No. of Deaths.	Ratio per 1,000.
1859	16,112	81	5·02	1,166	9	7·71	1,509	47	31·14
1860	16,125	116	7·19	1,299	8	6·16	1,670	45	26·94
1861	12,627	94	7·44	1,340	10	7·46	1,494	74	49·53
1862	12,027	69	5·73	1,175	10	8·51	1,314	47	35·76
1863	11,982	72	6·00	1,236	10	8·09	1,507	41	27·20
1864	11,206	95	8·47	1,464	10	6·82	1,762	77	43·70

TABLE 32.—Showing the average Strength of the Troops, Number of Admissions and Deaths from all Causes, and from Scarlatina for each Year from 1859 to 1864 at Aldershot, (furnished by Inspector-General of Hospitals, T. Ross Jameson, M.D.)

Aldershot, 23rd April 1865.

Year.	Average Strength of the Troops each Year.	Admissions from *all* Causes for each Year.	Admissions from Scarlatina each Year.	Deaths from *all* Causes each Year.	Deaths from Scarlatina each Year.
1859	16,112	16,194	8	81	..
1860	16,125	14,634	26	116	..
1861	12,627	13,115	9	94	1
1862	12,027	11,901	2	69	..
1863	11,982	10,917	1	72	..
1864	11,206	10,728	32	95	1

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For Her Majesty's Stationery Office.

3.

Dr Sunchus

21.h.17 (c).

METROPOLITAN SANITARY COMMISSION.

THIRD REPORT

OF THE

COMMISSIONERS

APPOINTED TO INQUIRE WHETHER ANY AND WHAT SPECIAL MEANS MAY BE REQUISITE FOR THE IMPROVEMENT OF THE HEALTH OF THE METROPOLIS.

Presented to both Houses of Parliament by Command of Her Majesty.

LONDON:

PRINTED BY WILLIAM CLOWES AND SONS, STAMFORD STREET,

FOR HER MAJESTY'S STATIONERY OFFICE.

1848.

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PLAN of METROPOLITAN SEWERS, WESTMINSTER DISTRICT, *to face* p. 14.

COMMISSION.

VICTORIA, by the Grace of God of the United Kingdom of Great Britain and Ireland Queen, Defender of the Faith; To Our Right Trusty and Well-beloved Councillor ROBERT GROSVENOR (commonly called Lord ROBERT GROSVENOR), and our Trusty and Well-beloved EDWIN CHADWICK, Esquire, THOMAS SOUTHWOOD SMITH, Doctor of Medicine, RICHARD OWEN, Esquire, Hunterian Professor at the College of Surgeons, and RICHARD LAMBERT JONES, Esquire, Greeting: WHEREAS We have thought it expedient, for divers good causes and considerations, that a Commission should forthwith issue for inquiring whether any and what special means may be requisite for the improvement of the Health of the Metropolis, with reference more particularly to the better House, Street, and Land Drainage, Street Cleansing, and Paving; the collection and removal of Soil and refuse, and the better supply of Water, for domestic use, for flushing Sewers and Drains, and cleansing Streets; and also as to the best means of using existing Works, and of erecting new Works requisite, and of maintaining them in good action; and also as to the most equitable provisions for regulating the Charges, or assessing, collecting, and paying the Monies requisite for such purposes, more especially in the Districts chiefly inhabited by the poorer classes of the population. NOW KNOW YE, that We, reposing great trust and confidence in your knowledge and ability, have authorized and appointed, and do by these presents authorize and appoint you, the said ROBERT GROSVENOR (commonly called Lord ROBERT GROSVENOR), EDWIN CHADWICK, THOMAS SOUTHWOOD SMITH, RICHARD OWEN, and RICHARD LAMBERT JONES, or any two or more of you, to be our Commissioners for the purposes aforesaid; AND for the better enabling you to carry these Our Royal intentions into effect, WE DO hereby give and grant to you, or any two or more of you, full power to call before you such persons as you shall judge likely to afford you any information on the subject of this Our Commission, and to inquire of and concerning the premises by all other lawful means whatsoever: AND WE do also hereby give and grant unto you, or any two or more of you, full power and authority, when the same shall appear to be requisite, to administer an oath or oaths to any person or persons whatsoever to be examined before you, touching or concerning the premises: AND WE do by these presents, Will and Ordain that this Our Commission shall continue in full force and virtue, and that you Our said Commissioners, or any two or more of you, may from time to time proceed in the execution thereof, and of every matter and thing therein contained, although the same be not continued from time to time by adjournment. AND Our further Will and Pleasure is that you Our said Commissioners, or any three or more of you, upon due inquiry into the premises, do report to us in writing, under your hands and seals, your several proceedings under and by virtue of this Commission, together with what you shall find touching or concerning the premises; AND WE further ordain that you, or any three

or more of you, may have liberty to report to us your proceedings under this Commission from time to time, should you judge it expedient so to do. And for your assistance is the due execution of these presents, we have made choice of Our trusty and well-beloved HENRY AUSTIN, Esquire, to be Secretary to this Our Commission, and to attend you, whose services and assistance We require you to avail yourselves of from time to time as occasion may require. IN WITNESS whereof We have caused these Our Letters to be made Patent.

WITNESS Ourself at Westminster, the Twenty-fourth Day of September, in the Eleventh Year of Our Reign.

By Writ of Privy Seal,

EDMUNDS.

Letter from Sir William Hooker to his son Dr. Joseph Hooker in India. 1848

here yesterday & sent many enquiries
at you, whom they hope they may
to see returned. The same wish is
pressed by Mrs. Howard, that she may
ask you for the help you have given
journey. She quotes her daughter's words
e change to Calcutta, instead of Jes-
, is most delightful", — "journey &
the better off", than at any time
e our marriage." — —
our acquaintance, (I will not say
end.) Dr. Buckland, is now in heavy
rase. He has patronized a certain com-
sition, called "Chemical Deodorizing &
infecting Fluid," by which the Patentee
professes to make stinking water clear &
sh, as crystal, — & to sweeten the
est drains! The Dean, wishing to try it
a large scale, opens one of the main
ers near the Abbey Westminster, &
does it so suddenly & unadvisedly,
tal a malignant fever instantly took

ort, of which many young persons
chiefly have died & which con-
tinues in the precincts of the ch
The sewer was opened in the mida
the day, & the effect was instantan
It was close to Westminster school,
many of the boys were seized with faintness
vomiting, & almost every family in the
Cloisters, Deans Yard & Palace Yo
has suffered, - in some cases every
dual has been ill. Young friend
Frere, has lost a niece of 23. - hi
the Revd Temple his daur. - Sir G
the same. & son of the Milman
despaired of. - Mrs Liddell, (the
of the late Sir Jas Smith), has lain
-sion, for 10 days, but was slight
on Sat. - the Wordsworths are all
Miss Buckland has been very bad
the Dean himself was seized duri
-ering home, in a chair & in Sou

x carried home insensible: he is
vering. I fear nobody is sorry for
dark by is better
. The matter was mentioned in
t., when it was admitted by, I think, Sir
iel, that the opening of the sewers
ining of the disease were contempo-
ous. but could not be proved as cause
Keet.

uesday. May 16 — I had a great
ure yesterday, dear Joseph. Yours not
t me expected the 2 Glenslows early
month: well, I had a letter from
e Frances, off. I to come on Friday next
19th. She is with her uncle & aunt,
Wraffham, near Cambridge. They came
h her, beyond this week, business
gement: — her aunt, Miss Jemyns,
travel up from Bottisham, on
day. I had said I shd be glad to
F. at any time, — so she proposed to
d herself of her aunts escort & to

accompany her to town. I wrote
instantly, agreeing to this proposal
But I fear that I cannot announce
arrival in this letter, which must
committed to the Gov! Post on Fri
aft.n. And I suppose she will no
arrive till the evening. She asks
meet her in Shoreditch, but this
be; - I on that day. Mr & Mrs
-den, of Swell Castle, are to come
in the morng, see the Gardens, -
all d.r, & accompany us to the H.
next day. And as Lizz is at H
not to return till that aft.n, I must
quit my post. But I will send
in the Fly, to Shoreditch, - for the
Frances. & will be as useful as
in helping her with Luggage &c,
have a few friends coming to me
Gardens. — Your affectionate
Col. Lawrence, is now Sir Henry. —

METROPOLITAN SANITARY COMMISSION.

THIRD REPORT.

MAY IT PLEASE YOUR MAJESTY:

HAVING been informed that cases of fever of a peculiar nature have recently occurred among the scholars of the Westminster School, as well as among the inhabitants of several houses in the Cloisters and Precinct of the Abbey Church, and rumour having ascribed the origin of this fever to the emptying and cleansing of a number of cesspools in the immediate neighbourhood, we have considered that the circumstances were such as to require investigation.

We have, accordingly, examined the masters of the school, its regular medical attendants, the physicians consulted on the occasion, and the officers of the works, together with such other persons connected with the locality as were likely to afford information: and we find the facts, as far as we have been able to ascertain them, to be as follows.

It appears that in all thirty-six persons were attacked, and, with two exceptions, very nearly at the same time. The attacks were almost entirely confined to the locality comprised by one side of Great Dean's Yard, one side of Little Dean's Yard, and the Cloisters, and they were all of the same general character. The first indication of illness, as is stated by the Rev. S. J. Rigaud, the second master, was observed as early as the 28th of March. The next case appears to have occurred on April 13, on which day the Rev. Mr. Weare, the under-master, was taken ill, though he was not confined to his room until the 19th. According to the evidence of Dr. Fincham, the professional attendant on Westminster School, another case occurred in the Cloisters, on the 14th of April. The Rev. Mr. Liddell, the head-master, states, on information received from Mr. Turle himself, that Miss Turle, that gentleman's daughter, and a female servant fell ill on the 16th. All these attacks among the residents preceded any sickness among the scholars. Fever first broke out in the school on the 18th: according to the account of Dr. Fincham, in the interval between the 18th and the 25th, eight boys had sickened; and to these must be added, according to the report of Mr. Liddell, the head-master, three others, namely, Mr. Turle's three sons, who became ill between April the 18th and the 23rd. "Counting all the boys," says Dr. Fincham, "eight sickened between April the 18th and 25th, and three between April the 29th and May the 3rd. Since this last date no fresh case has occurred;" but in this account Dr. Fincham does not appear to have reckoned Mr. Turle's three sons, reported by the head-master to have been taken ill between the 18th and the 23rd. According to the head-master's account, the total number of boys attacked was 14; the number of scholars being 125.

Among the other inhabitants, including servants, the number attacked appears to have been about 22. "Of these," says Dr. Fincham, "19 fell ill between April 18th and 25th, two between the 14th and 16th, and one on or about May 3rd; so that the total number of the sick was 36.

We thus find that 11 out of 14 of the boys fell ill between the 18th and 25th of April, and the three others between the 29th of April and the 3rd of May; and of the 22 other residents, 21 became ill between the 14th and the 25th of April, and one on or about the 3rd of May; so that of the total number of the sick (36), 32 were attacked within a period of eleven days.

There have been altogether four deaths, two among the boys of the Westminster School, and two among the other residents. Of these the two Westminster scholars certainly died of fever; the third death, that of a young lady in the Cloisters, also appears unequivocally to have been from fever; but the fourth was that of a lady who had long been in a delicate state of health, and it will be seen by the

evidence of Mr. M'Cann, her medical attendant, that this lady's death was in no way connected with fever: so that the whole number of deaths from fever has been three.

The track of the sickness, confined, as has been stated, mainly to one side of Great Dean's Yard, one side of Little Dean's Yard, and the Cloisters, is shown on the accompanying Plan; the school and houses where cases of sickness have been ascertained to have occurred being marked of a darker pink colour.*

The whole tenor of the evidence shows that the sickness was of one common description. The medical witnesses agree that the serious attacks were cases of fever, some of them very severe, and all presenting the same essential characters. One of the physicians, Dr. Todd, regards this fever as a new and peculiar form of disease; but Dr. Basham, a physician to the Westminster Hospital, states decidedly that in his opinion it is identical with a type long prevalent in London, and familiar to him in the wards of that Hospital. Being asked, "Have you had any cases of fever in or near the Dean's Yard, Westminster?—Yes; I have had many cases of the identical type of the present fever. I have now the case which I believe was the first case which occurred in the Dean's Yard recently.—Had you before had any of the same type of fever cases as the one from Dean's Yard from the same neighbourhood?—Yes, every spring for the last five years. In the spring of 1846 I had two cases from Little Dean's Yard, in the house of the Rev. Mr. B——, and also two cases in Barton-street." One of our own colleagues, also, Dr. Southwood Smith, who has had an opportunity of seeing two of the cases which were sent from Dean's Yard to the Fever Hospital, is of opinion that, in these two cases at least, the characters differed in no respect from those of a very common form of fever. It appears that there are in fact two distinct types of fever, each marked by definite characters, at present prevalent in London: the one being general or epidemic, and apparently produced by some cause widely diffused, and, though not confined to them, yet prevailing particularly among the destitute Irish; the other more limited in its extent, not spreading as an epidemic, but confined to certain localities, and apparently dependent on local causes.

Both the special characters of this fever, therefore, and the prevalence of its main course in one definite and well-marked line in the Abbey Precinct, lead to the conclusion that it has its origin in some local cause.

From such testimony as we have been able to obtain, it appears that on two different occasions before the breaking out of the fever, namely, on the 9th of March and about the 12th of April, a strong stench was experienced in the school. Most of the witnesses seem to confound the two occasions, or to remember only one of them, but the evidence is conclusive as to both. The first is thus described by Mr. Rigaud:—"There was a violent stench in the school in the second week in March, a remarkable stench, so strong that it affected myself in merely passing through it in going up into the school-room; it was more by the school-door than in the school. I was obliged to leave the school one morning for a few minutes, being very much inclined to vomit. There is a vestibule through which we enter into the school, there the stench was the strongest, but it penetrated about half way up the school itself; every boy must necessarily have passed through that region of stench in getting to his place. It affected Mr. Weare in a very similar manner to what it did myself, producing a strong metallic taste in his mouth." The second occurred, as far as we can ascertain, about the 12th of April. Mr. Weare, whose illness seems to have commenced about this date, thus speaks regarding it:—"My own impression is that the smell occurred about a week or nine days before Good Friday, but I cannot speak positively. Several of the boys in the school also think that it occurred about a week or fortnight before Easter. One boy is positive that the same smell of dead rats occurred on two occasions: the last and most offensive, he thinks, about eight or ten days before Easter; the first and less powerful smell, though of the same kind, several weeks before Easter."—"It seemed to me as if some rats had congregated together, and had died in great numbers under the floor of the school near the door. In consequence I sent to the Clerk of the Works to request that the floor should be taken up, and search made for the cause of the smell. The school was free from smell at 8 o'clock on the morning when the stench occurred; at 10 o'clock we all perceived the smell, and it prevailed, I think, all that day, and a portion of the next."

From the evidence of Mr. White Cooper, the surgeon who attended the family

* The dormitory and the boarding-houses on the south side of Little Dean's Yard are not marked, as there is reason to suppose that the cases of sickness occurring did not originate there.

of the Dean of Westminster, it appears that disagreeable smells were perceived in other places besides the school, and were particularly experienced by him in the house where he saw the first case of illness. "The family," he states, "had been decidedly complaining of an unpleasant smell, as I ascertained, for some days previous to the attack; they stated that there had been a very unpleasant smell in the house, and certainly I can bear testimony to it myself as being a peculiarly disagreeable odour:"—that is to say, at the time of his professional visit after the illness broke out.

In a letter addressed to the Dean of Westminster, Mr. Cooper further states the particulars of three cases of illness, distinctly traceable, as he thinks, to a similar cause, namely, the effluvia arising from drains. The first was his own case. "I was passing," he says, "the drain-grating at the corner of Union-street, Bond-street, when I perceived a most faint and disagreeable smell arising from it. Being immediately attacked with nausea, and an indescribable sensation of illness, I at once returned home, and drank half a wine-glassful of brandy; after a short time the indisposition appeared to pass away, but the peculiar smell of the drain still remained in my nostrils." He was confined to the house some days with feverish symptoms. The second case was that of "a servant-maid aged 17, of a stout plethoric make and healthy constitution, who was passing a drain-grating at the corner of Queen-street, Lincoln's Inn Fields, and felt a most unpleasant smell, and became faint and sick. On reaching home she took a cup of tea, but was soon after seized with retching and vomiting. Her head then ached, and she was attacked with shivering, and pains in her back and limbs. When I first saw her, on the subsequent day, her face was flushed, head very hot, pulse 120, tongue brown, dry, and foul, skin hot and dry: and it was not till the third day that these feverish symptoms subsided." As a third case he gives the following:—"A gentleman has informed me that on Monday he was in perfect health during the morning; he had occasion, in the evening, to pass through Gray's Inn-lane, from Holborn to King's Cross; whilst doing so he remarked the very unpleasant smell which prevailed; within an hour from that time he was attacked with violent headache, especially in the region of the frontal sinus; this was followed by vomiting, diarrhœa, and symptoms of febrile disturbance, which confined him to his bed several days, and from which he has scarcely yet recovered."

A short time ago the operation of such influences was entirely overlooked, and the statement of them was treated as a chimera, or regarded as an exaggeration. With reference to the present inquiry, however, all the medical witnesses examined concur in ascribing the origin of the fever to emanations of this kind, though they differ widely as to the period necessary for the development of their effect; and a belief in the influence of such causes in producing diseases is rapidly and widely extending.

We have already intimated that common rumour has attributed the cause of the recent outbreak of fever in the Abbey Precinct to the cleansing and filling up of *a number* of cesspools in and about Great Dean's Yard. It appears from the evidence of Mr. William Goodall, Clerk of the Works to the Metropolitan Commission of Sewers, that eighteen cesspools were cleansed in Dean's Yard between the 22nd of January and the 3rd of February, fifteen of which were emptied under his own immediate superintendence, in accordance with the directions of the Dean of Westminster and the Clerk of Works to the Dean and Chapter. It cannot be doubted that danger might arise from the emptying of so large a number of cesspools, if the work were done in a way to disturb and diffuse the noxious gases generated therein; and should the diffusion of such gases take place at particular states of the weather, it might produce most injurious and even immediately fatal effects on weakly or susceptible persons.* It is important, however, to attend to the circumstances connected with the performance of the operations in this particular instance.

It appears that by the process of emptying employed on this occasion there must have been much less than the usual disturbance of the soil and consequent disengagement of deleterious gases. For instead of being carried away in buckets, and exposed in open channels, which present for a considerable time a large surface for the escape of effluvia, the soil was removed by pumps like fire-engines, with a closed flexible tube both for suction and discharge, and, consequently, with

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Vide cases quoted above and at page 8 and seq.

little or no exposure to the external atmosphere; the fœcal matter being also considerably diluted with water to render it more easily pumped, and having received at the same time an admixture of a deodorizing fluid, the effect of which in reducing smell and fixing some of the volatile and diffusable gases is universally admitted. The answers of all classes of witnesses who have seen this process will be found to be unanimous as to its superiority, of which, indeed, few persons that had any mechanical knowledge could doubt.

Mr. M'Cann, the surgeon, states that, accidentally seeing the pump in operation, he was so struck with it that he stopped to examine it. "I was going to Westminster," he says, "and saw it pumping away, and I could not pass in my carriage; I got out and said to a man, 'What are you doing?' and he told me, and I looked on and saw it. This was in Tufton-street."

"You were not informed by your nose of what he was doing?—No; on the contrary. I certainly was very much pleased with the appearance of it, for there was not a speck to be seen. I thought the man was going to wash the streets with water or something of the kind."

From the small amount of surface disturbed, and the dilution with water, as well as with the deodorizing fluid, the gas and smell evolved in the process are stated to be no greater, or even less, than in the ordinary quiescent condition of such receptacles. Even during the operation there can be no increase of danger from the process itself, whilst there is an immediate relief after the removal of the decomposing refuse. The operation has now been performed, in more than a thousand instances, in every part of the metropolis, without, so far as we have been able to ascertain, any complaint as to the nature of the process, or of its being followed by any injurious consequences; on the contrary, there is positive and decisive evidence, to which we shall have occasion again to advert, of more direct and immediate effects, in the diminution of disease, than could have been expected from one only of several sources of disease being removed.

But the imagination and the rumour, that the emptying process could itself have been the source of disease in the present case, shows an extent of ignorance liable to misdirection, which it is necessary that those who conduct such operations should guard themselves against by full and repeated expositions of the facts. We infer that the process of emptying could not have been the source of the fever in question, because, as has already been stated, the cleansing of the cesspools commenced on the 22nd of January, and terminated on the 3rd of February; and no case of illness appeared until the 28th of March, being an interval of nearly eight weeks from the time when the operation of cleansing was completed; while the second case of illness did not occur until the 12th of April, being an interval of about ten weeks. The cases already recited from the experience of Mr. Cooper show the rapidity with which the diffusion of a poison of this description produces its specific effects. Similar evidence might be accumulated to a large extent, proving that in general the operation of a poison of this kind must be reckoned by days or hours, and not by weeks. Thus Dr. Christison relates that, "in August 1831, 22 boys living at a boarding-school at Clapham were seized in the course of three or four hours with alarming symptoms of violent irritation in the stomach and bowels, subsultus of the muscles of the arms, and excessive prostration of strength. Another had been similarly attacked three days before: this child died in twenty-five, and one of the others in twenty-three hours. On examination after death, the Peyerian glands of the intestines were found in the former case enlarged, and as it were tuberculated; in the other there were also ulcers of the mucous coat of the small intestines, and softening of that coat in the colon. A suspicion of accidental poisoning having naturally arisen, the various utensils and articles of food used by the family were examined, but without success. And the only circumstance which appeared to explain the accident was, that *two days* before the first child took ill a foul cesspool had been opened, and the materials diffused over a garden adjoining to the children's play-ground. This was considered a sufficient cause of the disease by Dr. Spurgin and Messrs. Angus and Saunders of Clapham, as well as by Drs. Latham and Chambers and Mr. Pearson of London, who personally examined the whole particulars."

Mr. Liddle, the Surgeon of the Whitechapel Union, mentions a case that came under his observation in August, 1837, in Johnson's Change, Rosemary Lane, Whitechapel, a place consisting of about twenty houses, in which fever broke out and prevailed in almost every house, following within *three or four days* the over-

flowing of a cesspool, the contents of which remained exposed on the surface, there being no sewer to carry off the noxious matter.

Dr. Southwood Smith witnessed, in June, 1847, in a court (Hair-Brain Court), also in Rosemary Lane, a similar case. The drainage of this court, consisting of sixteen houses, became obstructed in consequence of repairs in the main street, Blue Anchor Yard. The refuse of the houses with the contents of the privies flowed into the court, and were dammed in by the obstruction of the outlet; the accumulation being increased by two or three heavy showers of rain. In the space of *three days* fever broke out in every house on one side of this court, with the exception of one house, and within *two days* the symptoms of fever were fully developed in six persons, four being attacked on the first day, and two on the day following. The sick were removed from the court, and the drain was repaired, after which no new case of fever occurred.

When an individual is exposed to a poison of this class, it appears to be no unusual occurrence for nausea and vomiting to be produced on the spot, and then the peculiar characters of fever are rapidly developed in the course of a few hours, as exemplified in the cases stated by Mr. Cooper. When, on the other hand, the resisting powers of the constitution are gradually enfeebled by a long-continued exposure to a less intense dose of the poison, symptoms of indisposition, generally of a definite character, are manifested some time before the febrile seizure. This, however, does not appear to have been the case with the individuals recently attacked in the Abbey Precinct. On the contrary, it is very remarkable that the cause, whatever it may be, that produced this sickness, appears to have acted with a rapidity analagous to that in the cases just recited: all the persons attacked, of different ages, constitutions, and habits, with the exception of one or two, having their illness developed within a range of eleven days. It is not credible that this cause should have remained quiescent for ten or eleven weeks, and then, suddenly beginning to act with violence, should have exhausted its force in eleven days.

That the particular mode of cleansing adopted on this occasion had no share whatever in the production of the disease that followed, is therefore placed beyond all reasonable doubt. Still, as it is desirable that the public mind should be fully satisfied as to the safety of a most useful and economical, although new, operation, it may be proper to give a few examples of the statements made respecting it by those who have had opportunities of observing it in action and have made special inquiries as to its results.

Among these we may quote the evidence of Mr. William Crowe, Inspector of Nuisances in the parishes of St. Margaret and St. John, Westminster, who is asked—

"Have you had any cesspools cleansed in your parish?—Yes, from 300 to 400 within the last two years.

"What has been the usual mode of cleansing them?—Formerly, by the nightmen; latterly, when I have been applied to, I have had it done by the pump and hose in the mode in use by the Commissioners of Sewers, pumping the matter into the gullies.

"How often have you had cleansing done by that mode?—More than one-third of the houses in Palace Street and William Street, streets which are very badly cleansed, were cleansed by this mode. It was I who introduced it there.

"Had you seen it in use elsewhere?—Yes, in Dean's Yard.

"What were the reasons which induced you to prefer that method?—I thought it a cleaner process altogether, quicker and cheaper. I found people inquiring for it. I was also anxious to have the cesspools cleaned out. The charge for the work was generally about one-third less.

"Suppose the charges were the same, and you required to have the cesspool of your own house cleansed, which method would you prefer?—I should have it done in this method.

"What do you find the dispositions of the people who have used this method of cleansing, as to using it again when their cesspools become filled?—I have no doubt they would prefer to have it done again in this method. Here and there, not in many cases, the only dissatisfaction expressed was where the pump did not take away hard solid substances, such as were left at the bottom.

"Did you hear of any cases of illness following the cleansing of cesspools by

this process?—None, except what I have heard of in Dean's Yard, of which, however, I know nothing myself.

"You would now, then, you were understood to say, if you had a cesspool of your own, have it cleansed in this method?—Yes, I should.

"Suppose, on the approach of cholera or of any other epidemic disease, you, as an Inspector of Nuisances, were required to cleanse the poorer districts rapidly, including the cleansing of cesspools, how would you, if you were left to yourself, now proceed, after all the observation you have had on the subject?—I should apply those pumps as actively as I could. The only objection to the use of this process is, that some of the gully-shoots are very small, and the drains in a bad condition, and these require cleansing too.

"You would of course apply for larger quantities of water?—Just so.

"Do you understand whether the health of the poorer districts cleansed has been better or worse recently?—Better, decidedly.

"Have you heard any statements by the people in respect to their health after those cleansings?—I cannot say that I have heard anything more than their expressing their satisfaction at their getting rid of the nuisance."

From the evidence of Mr. Bowie, the surgeon, who has made a special investigation as to the results of this process on a large range of district, we quote the following statements:—

"30, *New Road, Back Lane, Whitechapel.*—Two privies cleansed there and in a neighbouring court. Mr. Hobbs, the landlord, says they were done well; that the smell before the cleansing was very bad, but that now it is much better; and that, if he had a hundred to do, he would have them all done the same way, if it cost double the expense. The whole of the drainage he describes as being in a very bad state, and the smells from the drain as being most offensive; says, that since the cleansing, his family have all been quite well; but before it was done they had all been very sickly, four of them, besides himself, having suffered severely from scarlet fever.

"In a small court at the back of the house there are four small cottages. Henry Hill, one of the inhabitants, says that the cleansing by the machine is a great improvement. And Mrs. Burns, who has lived in the court seven years, says that it is a very great improvement and a good invention.

"33, *Gun Street.*—Three privies emptied—one on the premises, one in Frost Street, and another in Steward Street. Was done with very little annoyance or smell. The house, which is tolerably good, has been rendered much more comfortable. Health of inhabitants has generally been good.

"*Goulston Court.*—Was told that before the privy was emptied a great many persons had been taken to the workhouse in fever, three or four of whom had died, but that since the cleansing took place there had not been a case of fever nor a single death."

By a reference to the evidence of Mr. Bowie, who says that he has endeavoured as far as he was able to give the statements in the language in which he received them, it will be seen that those representations might be multiplied to a great extent.

But successful as the evidence shows that these cleansing operations have hitherto been, we have to express an opinion that they ought to be placed under better direction than that of common workmen, who appear to have been employed on this occasion at Westminster. The Dean complained at the time that these men did not execute the work properly or with sufficient speed. The answer to the complaint was, that the work was new, and that the men were not at the time properly organized. It appears also that the cesspools, after being emptied, were not so quickly closed up as was desirable. Nevertheless, on the whole, the operation, where its specific effect could be tested, appears to have answered the Dean's anticipations. The porter of the Cloisters (Henry Burroughs), for example, states that the health of his family has been greatly improved by it.

Being asked, "What was the state of the health of your family before this new operation of cleansing was performed?"—he answers, "I have had a great deal of sickness in my family from time to time. I have a sickly wife and young family, and I have lost them all but two.

"What has been the comparative health of your family since this cleansing has been effected, and the cesspools have been filled up?—I have had no sickness at all; and myself, my wife, and two children are all perfectly well.

"You have had no sickness, you say, since this emptying took place?—Not at all.

"Has the apparent health of your children improved?—Yes."

The returns in relation to the effect of the partial cleansing made to the Metropolitan Commissioners of Sewers are decisive and satisfactory.

	No. of Cesspools.	
Benbow's-rents, from 1 to 6 .	4	Cesspools full again; one that was emptied full again; not emptied before for eight years; no illness or fever.
Mrs. Andrews, No. 5 . . .	1	
Mrs. Nagle, No. 6	1	Great improvement; very satisfied; no stench; no illness.
Westminster Schools, Castle-lane	..	No illness among the scholars since the cleansing of the cesspool; the schoolmaster hopes the Commissioners will allow the pumps to cleanse one at his private residence in York-street.
24, Bell-street, Vincent-square .	..	Inhabitants in good health since the cleansing of two cesspools.
James Weston, George-court, St. Ann-street, Westminster	..	States that all have been in perfect health since the cesspools were emptied; and that the example set by the Commissioners' men of washing the court after cleansing the cesspools has been productive of good, inasmuch as each tenant has ever since taken his turn to keep it clean.
12 and 13, St. John's-buildings	..	The inhabitants applied for the use of the Commissioners' pump; but finding it was not allowed to work this week, the cesspools have been emptied by the nightmen, and they state that the operation caused such a dreadful stench for two days that they could not eat their meals, and they hope the Commissioners will not allow the night-carts to be used again.
Blue Anchor-yard	..	The inhabitants expressed their gratitude to the Commissioners for removing a nuisance that would have been allowed to remain all the summer; they are all in good health at present, which they were not before the cesspools were cleared by the pump; these persons say they should like to thank the gentlemen personally for their kindness.
Mr. Gonyen, York-street, Westminster.	..	Has had several cesspools cleansed by the pumps; wants some cleansed at present; thinks it a shame that he should be obliged to employ the night-carts when it could be done by such an excellent contrivance; feels confident that if the pumps are stopped it will be the cause of a great deal of illness.
George-court, Great Peter-street, Westminster.	..	The inhabitants have been perfectly healthy since the cleansing, and expressed their thanks to the Commissioners.
10, Ann-street, Westminster .	..	Mr. Alligan states that no illness has occurred since the cleansing of the cesspools by the pump, that he never felt better in all his life than at present.
Mr. Pitman, 5, Hartshorn-court, Golden-lane.	4	First cesspool very clean; Mr. P. says the cleansing is a great benefit; now no smell; no illness; last year, at this time, great deal of fever in the court, supposed from foul state of cesspools; all healthy now.
Mrs. Evans, 5, Fishmongers' alley, Borough-market,	..	And rest of inhabitants, expressed their thanks, and say that before the pump was used to cleanse the cesspools the stench was very bad, but that since the cleansing took place the court is much healthier, and the children look better.
Mr. Giles, Frederick's-place, Bond's-place.	1	Great improvement since emptied; fever raging before, none now; private drains stopped.
Timothy Collins, 5, Hayes-court, Glasshouse-street, Rosemary-lane.	..	States that 3 cesspools were cleansed by the pump. He has been a resident 5 years. About 10 months previous, 2 children having died from fever, an inquest was held on the bodies, at the Windmill, in Rosemary-lane. The surgeon gave it as his opinion that the children died from the effects of the poisonous effluvia arising from the cesspool-matter. No illness has occurred since. The parties are very grateful to the Commissioners.
Baker's Arms-alley, Rosemary-lane.	2	Two cesspools cleansed by the pumps. The inhabitants have been perfectly healthy since. Hopes the pump will be always used to cleanse the cesspools, for the night-carts always make them ill.
Goulston-court, Whitechapel.	..	William Sheen states that they are all in good health, and have been since the cleansing, before which they were always ailing. His wife died just before the cleansing; thinks it was through the stench. Hopes the Commissioners will allow the other courts to be cleansed in the same way.

	No. of Cesspools.	
Mr. Stead, 5, Owen's-row, Islington.	1	Much pleased, and certainly benefited; will attend the Surveyor if required.
Mr. Smith, 2, Goswell-terrace, Goswell-street.	2	Very greatly benefited, thinks it a capital invention; will attend the Surveyor if required.
Mr. Earl, Caroline-court, Goswell-street.	1	Greatly benefited; place now sweet and clean; tenants now stop; before cleansing, the tenements frequently empty; no illness.
Mr. Johnson, Flying Horse-yard. Finsbury.	2	His opinion is, that the public are much indebted to the Commissioners for the introduction of the pump, and for himself says, it has much benefited his property; the effluvium was so strong, that people would not stay in his house; since cleansing, he keeps his tenants, and without fault; will be most happy to certify to the above, should he be called on by the Surveyor; no sickness.
Mr. Smith, Eagleton-place, Twister's-alley, Whitecross-street.		No smell now; before cleansing I could not eat my meals, the effluvium was so strong, but now I am cheerful and hearty, with good appetite; no illness.
Chapel-court, Windmill-street, Finsbury.	6	Greatly benefited; no effluvia; no sickness.
J. Hacker, 4, Gloucester-court, and property in Cow's-court, Chequer-place, Whitecross-street.	4	That the method is very beneficial to the public, leaving no old dead smell as before; places now sweet and wholesome; no illness; will attend the Surveyor if required.

Effectual as the cleansing appears to be, the relief that it affords is only of a temporary and partial kind, to be had recourse to while more complete measures are pending. The following instances from the returns illustrate this point:—

	No. of Cesspools.	
Mr. Lampton, 3, George's-buildings, French-alley.	1	Private drain stopped, and cesspool full again; found great improvement when first emptied.
Mr. Brown, 4, Bath-buildings, Baldwin-street, City-road.	1	Very satisfied when first done, but great complaint respecting private drains; they are very defective; considers it a great improvement.
16 and 17, St. John-square, Clerkenwell.	1	Should always give a preference to the new system; private drains very defective; cesspools nearly full again; considers it a great improvement.
Mrs. Flowers, 5, Thomas-court .	1	Great improvement; great complaints respecting the non-removal of ashes and dust.
Mr. Jennings, 3, Thomas-court .	..	Considers it a great improvement, but complains of the stench from dust-heap; states that they cannot get it removed.
Mr. Sullivan, 3, St. James's-place, Golden-lane.	2	No stench now; considers it a great improvement; no illness. From the commencement of Golden-lane to the finish, the greatest complaint is want of water and the cleansing of dust-holes.

The general result of these statements is clearly to show that an operation affecting so materially for good or evil the health of great numbers of the population should be conducted under the superintendence of persons of knowledge and experience, acquainted with the nature of the gases likely to be evolved, and competent to inform, instruct, and influence housekeepers and owners with reference to the whole of the measures requisite to render the process safe and complete.

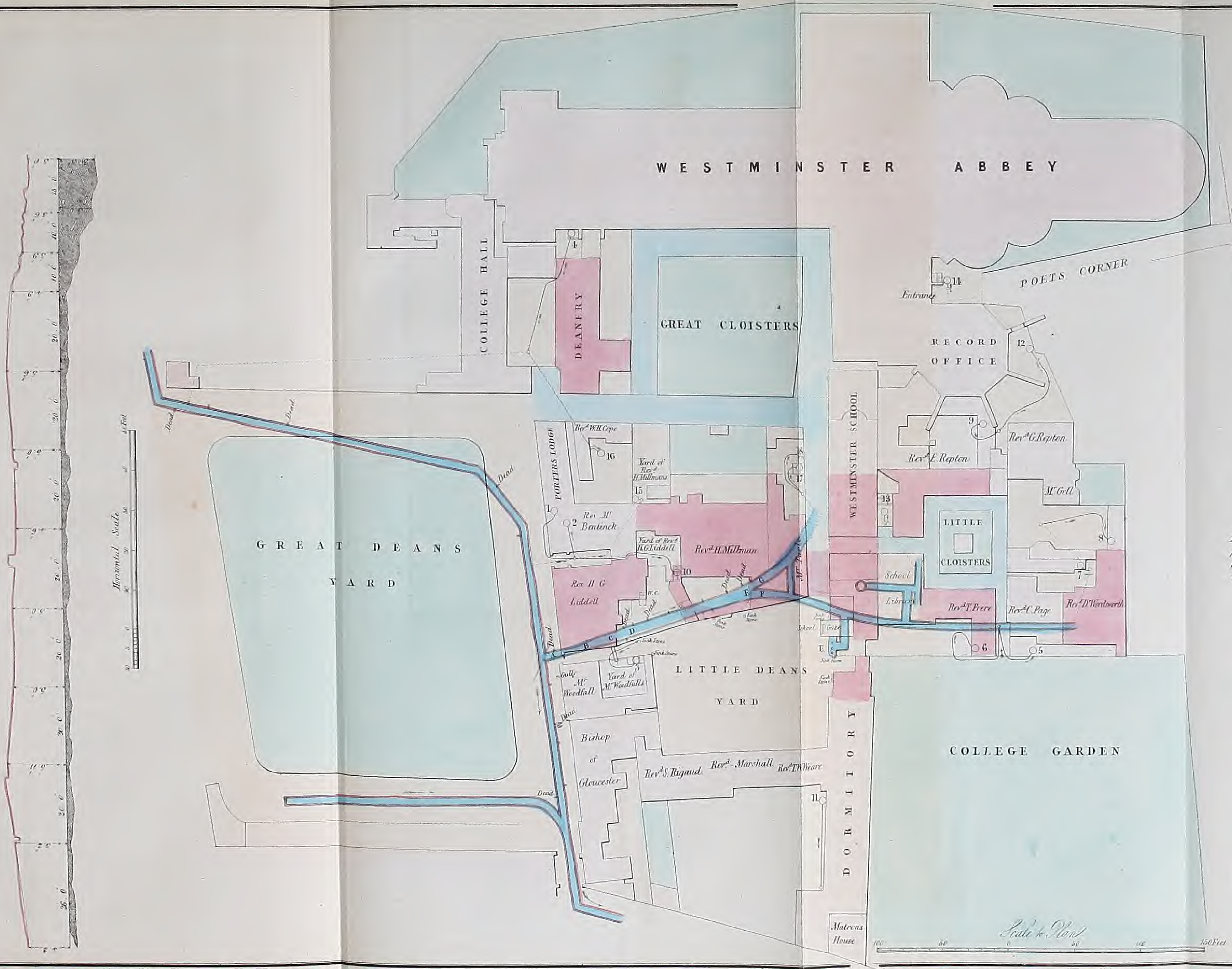
We may also observe that these statements further exemplify, in a very striking manner, the absolute necessity of obtaining powers for carrying out simultaneously the whole of the processes included in cleansing. It is not sufficient to have command of the sewers alone, or of the sewers together with the supply of water; it is necessary to have the further power of removing accumulations of dust and filth; that is, to direct the functions of the scavenger. The Contagious Disease Prevention Act gives no general powers for providing or paying for supplies of water, nor for compelling the concurrent action of those who have the charge of scavengering. The above descriptions show the state in which these places would be left, on the return of cholera, or the visitation of any other malignant epidemic disease, notwithstanding the most active exertions of the Commission of Sewers.

But the immediate cause of the sickness in the Abbey Precinct has been further attributed to the diffusion of noxious gases arising from the filling up of *a particular* cesspool near the school. It appears that a cesspool under the two privies imme-

Longitudinal Section

Of Sewer in Little Deans Yard from its junction in Great Deans Yard to junction of two Drains F. G. under M^r Millmans premises, thence thro' drain F to junction of a drain intersecting Drains F. G. being utmost extent that can be explored with safety.

Note. The dark tint in all the sections shews the depth of deposit, this deposit varies much, being in some places semi fluid, increasing in consistency to a hard sandy mass in some it is hard and sand only, in other places the deposit consists of sand, earth, stones, chalk and black soil, the depth of deposit varies exceedingly being from 3 inches up to 4 feet. In the centre part on the left hand side there is a ridge of fine deposit, extending the whole length of Sewer varying in depth from 2 to 4 feet, in drain G the deposit is hard and sandy, in drain F the deposit is semifluid of a tough slimy nature, quite black.



METROPOLITAN SEWERS,

WESTMINSTER &c DISTRICT,

MAY 1848.

The Cesspools are marked

The Gratings into which they were discharged are marked

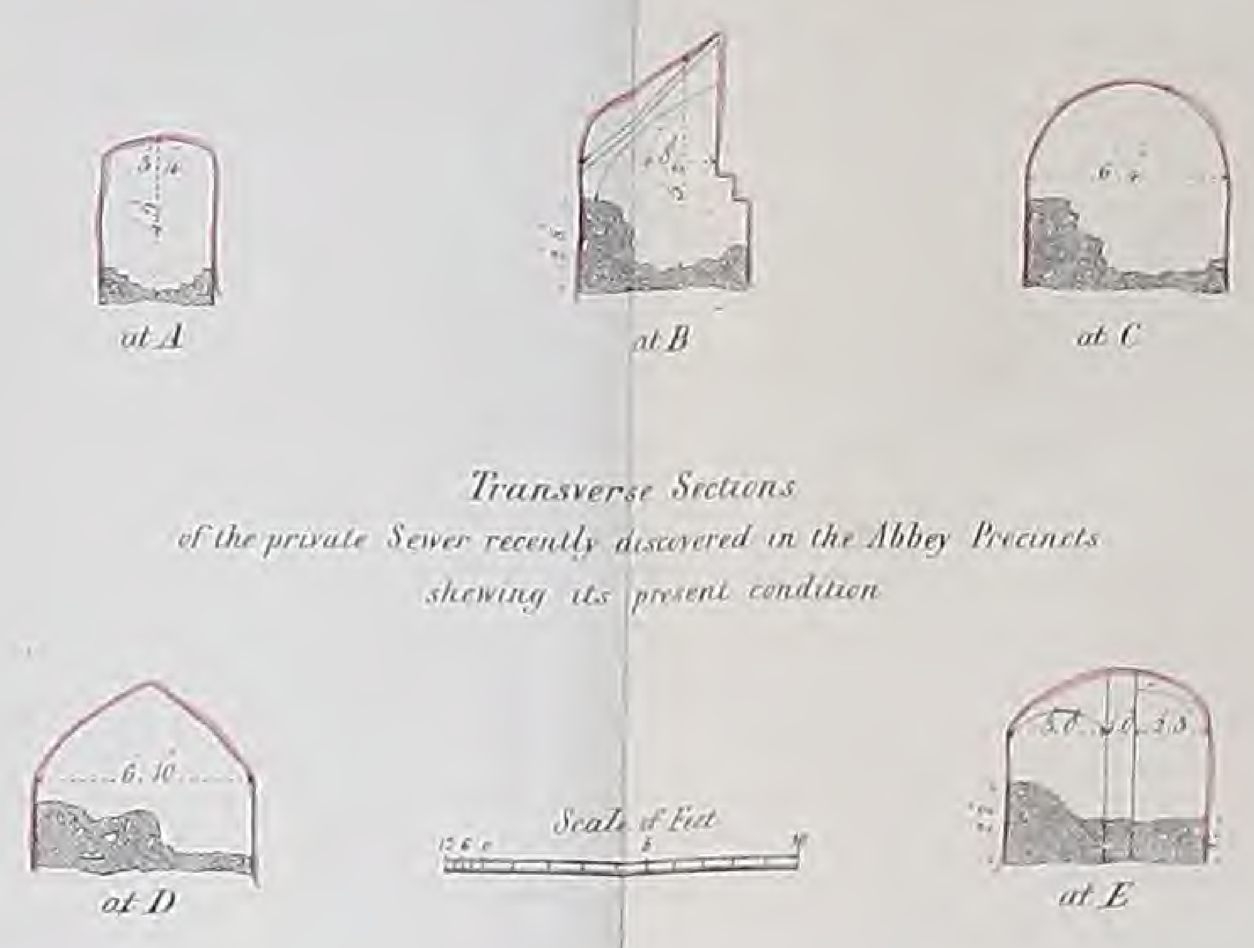
The Private Drains ,,

The Public Sewer ,,

The Private Sewer ,,

Nº	Date of Cleansing	Situation of Cesspool	Name of Resident	Name of Officer in charge
1	22 Jan^y 1848	Porters Lodge G^t Deans Yard	Henry Burroughs	William Goodall
2	d^o	Great Deans Yard	Rev^d M^r Bentinck	d^o
3	24 ,,	d^o	M^r Woodfall	d^o
4	d^o	Great Cloisters	The Dean	d^o
5	25 ,,	Little Cloisters	Rev^d C. Page	d^o
6	,,	d^o	Rev^d T. Frere	d^o
7	26 ,,	d^o	Rev^d D^r Wordsworth	d^o
8	,,	d^o	M^r Gell	d^o
9	27 ,,	d^o	Rev^d E. Repton	d^o
10	31 ,,	Great Deans Yard	Rev^d M^r Liddell	d^o
11	,,	Little Deans Yard	Rev^d M^r Weare	d^o
12	,,	Little Cloisters	Rev^d G. Repton	d^o
13	1 Feb^y	d^o	Rev^d E. Repton	d^o
14	,,	Poets Corner	(belonging to Abbey)	d^o
15	,,	Little Deans Yard	Rev^d H. Millman	d^o
16	3 ,,	Great Cloisters	Rev^d M^r Cepe	William Quarrell
17	,,	d^o	M^r Furle	d^o
18	,,	d^o	d^o	d^o

The lines of Private Sewers and Drains within the Abbey Precinct are laid down with as much accuracy as possible, but in consequence of some of them containing between 3 & 4 feet of soil, thorough examination has been impossible. The Dean & Chapter possess no plans, levels or other particulars respecting them. Their Officer who has had charge of them for nearly 20 years has always thought them "a mystery".



Transverse Sections of the private Sewer recently discovered in the Abbey Precincts shewing its present condition

Standidge & C^o Litho, London.

diately below the windows of the school on the eastern side, which had been emptied on the 27th of January, was filled up on the 9th of March, with a view to substitute for the privy the soil-pan apparatus. As the offensive smells already described by the masters of the school have been supposed to arise from the filling up of this cesspool, we have examined the Clerk of the Works to the Dean and Chapter, who superintended the operation, and also the workmen employed in performing it.

It will be seen by the evidence of Mr. Richard Carter, the Clerk of the Works, that this cesspool "had not been visited by any person since it had been emptied, as the seats were taken away;" that "it contained only water that had drained into it from the rain and from sinks;" and that the operation of filling up, though "it certainly produced a smell," produced "nothing more than you would expect from filling in a cesspool."

Similar evidence is given by Edward Spicer and James Ovans, the men employed to fill it up, who state that "it had not been used by anybody since it was cleansed, only by slop-pails;" and that its smell was rather that of "dirty water than of night-soil."

Edward Spicer, being asked, "Do you believe, from the state in which you found the matter of the cesspool, that any extraordinary smell could have arisen from it?" answers, "I do not see that there could, as we did not smell it when we went in, particularly; we certainly could smell it, but that was all."

"Do you distinctly state that it smelt less than cesspools usually do?—Yes; certainly much less. I have gone to many bogs, as we call them, after they have been cleaned of a night, to put the brick-work to rights in the morning, and they have been most awful to what this was.

"(To *James Ovans.*) Is that your opinion?—Yes; this was nothing to be compared with them."

From this evidence it appears very improbable that this cesspool could have been in a condition to emit such an offensive smell as that experienced in the school, described as being similar to the smell of dead rats; seeing that the smell from the cesspool is said to be not even like that of night-soil, but only of dirty water as from slop-pails.

It is highly probable, however, that the cause of the smells and the cause of the sickness were identical; but, for the reasons already assigned, it is not credible that the filling up of the cesspool on the 9th of March was that cause, since no case of illness occurred until the 28th of March, a period of nineteen days, and the commencement of what may be considered as the epidemic did not take place until the 14th of April, or at an interval of more than five weeks.

The disease has been further attributed to the opening of a sewer near Poets' Corner. As it has been positively affirmed that the opening of this sewer immediately preceded the breaking out of the fever, and as it has been imagined that the winds prevalent at that time would have carried any emanations from it directly to the houses where the first cases of sickness occurred, we have inquired very minutely into the condition of this sewer, and into the circumstances connected with its opening.

It appears that this sewer was open nearly four days, the opening being covered at night with iron plates; and it is stated that during this interval four persons, who slept in bed-rooms exposed to emanations from this opening, were attacked with fever. On an inspection of the spot we find that currents of air, blowing in the direction of the house in question (which, however, is 150 yards distant, with buildings of considerable height intervening), might possibly carry to it emanations from this sewer, and consequently that such emanations might produce, or contribute to produce, disease.

It will be seen, however, by the evidence of Mr. Naish, the plumber who opened the sewer, and by that of Mr. Morton, who descended into it several times on the day when it was opened, that it appeared to them to be unusually clean and free from smell, so that, as far as these witnesses were capable of judging from the absence of smell and of any sensible effect upon themselves, it could not at that time have been giving off any noxious emanations.

But even if it had been unusually foul, instead of being, as these witnesses describe it, particularly clean, emanations going off from it could scarcely have reached the house alluded to, because the direction of the wind then prevalent, as is proved by a reference to the register, was such as must have driven these emanations away from it nearly the whole time that the sewer was open.

Moreover, the comparison of dates alone is decisive against the supposition that

the opening of this sewer could have been the cause of the epidemic in the Abbey Precinct. It appears that this sewer was first opened on Monday the 17th of April: but it has been shown that disease had already appeared in the Abbey Precinct as early as the 28th of March; that another attack of illness occurred on the 13th of April—"without doubt," says the medical man in attendance on the case, "an incipient attack of the same form then prevailing in the Precinct;" and that two decisive cases of fever had broken out between the 14th and the 16th of April: it is impossible, therefore, that this sewer, which was not opened until the 17th, could have been the cause of the first cases of disease that occurred.

Finding, then, no satisfactory cause for the origin of the fever in any of the statements made to us, we instituted a careful examination into the condition of the Abbey Precinct itself; and there we found abundant sources of disease; sources which had been entirely overlooked, and which still exist.

It appears that the whole of the Abbey Precinct is extra-parochial, and that no part of its sewerage or drainage is under the cognizance of the public authorities, with the exception of the main or public sewer that passes diagonally across Great Dean's Yard, and one branch sewer on the south side of Great Dean's Yard. The direction of this public sewer is marked on the accompanying Plan. In connexion with this public sewer there is, at the entrance to Little Dean's Yard, a large private sewer, 3 feet 6 inches wide and 4 feet 6 inches high at its mouth—that is, at its outlet into the public sewer in Great Dean's Yard. This sewer, instead of narrowing, grows wider as it recedes from its junction with the public sewer, so that it soon attains the width of 6 feet 6 inches; and at a distance of 166 feet it divides into two very irregularly-shaped branches, one of which, suddenly descending 2 feet 10 inches, passes under several of the houses on the north side of Little Dean's Yard, under the Cloisters, under the vestibule of the Westminster School, and then, either directly or by branch drains, under the houses on each side of the Little Cloisters. The course of this large private sewer, as far as it has been possible to trace it, is delineated on the Plan; cross sections of it, at A, B, C, D, and E, are also given, in order to exhibit its actual condition.

It will be seen, by comparing the course of this sewer with the track of fever already delineated, that both are coincident, or very nearly so.

We requested the officer of the Dean and Chapter, charged with the care of these matters, to point out to us the exact course and state of the drainage of the Abbey Precinct. We found, however, that neither plans, levels, nor positive particulars of any kind could be obtained. From the evidence of Mr. Richard Carter, the officer in question, who has been for upwards of nineteen years Clerk of the Works of the College and Church of St. Peter's, that is, to the Dean and Chapter of Westminster, it appears that he could give no positive information as to the course of this sewer or its branches, though under the sole supervision of the Dean and Chapter; and that during the period he had been in office he had taken no pains to ascertain the direction or condition of the sewers and drains; "drains being," he says, "things he never troubled himself with, so long as the water went off." When endeavouring to describe the course of this sewer, he uses such expressions as "I think it continues, but I am not positive;" "I have not any plans;" "that is about the direction of it;" "that is the direction I consider the drain to be in;" "I think the sewer runs under the dark arch;" "I cannot go further;" "I may have made a mistake;" "it is all a mystery."

When questioned as to the correctness of a statement to the effect that the sewer at its commencement is 2 feet 10 inches deep in soil, he answers, "I cannot say it is not so."

From the evidence of Mr. Batterbury, the foreman of the flushing men of the Westminster Sewer Commission, and of Mr. Lovick, one of the assistant surveyors to the Metropolitan Commission of Sewers, whom we requested to examine the condition of this sewer, it appears that from the part where it divides into its two great branches the soil is so deep, that, after several attempts to examine the sewer, they were unable to proceed with the investigation. The soil rose to the top of their long water-boots, and yet they found that they were still sinking, and that they could proceed no further, both the top and bottom of the sewer being exceedingly irregular and dangerous to traverse. "When we got to the junction of these two old passages," (see Plan, and Section at E,) says Mr. Batterbury, "I walked in as far as my boots would carry me in the soft, and then the soil became hard; and beyond that 20 feet it was very soft indeed; and we were then obliged

to get back, otherwise we should have got into the deep—we could not tell how deep. I got into the junction, and I got a 3 ft. 6 in. gauging-rod, and pushed my hand down to the rise, to feel if there was a hole at the bottom, but I could not feel it."

He proceeds to show that the contents of this sewer beyond the junction could not possibly flow into the public sewer, because it rises as it approaches it: "It has to come over this point, if it comes into our sewer; the soil is 2 feet 10, and beyond that it is too deep to get to it;" that consequently this private sewer is an extended cesspool, being, beyond the part marked E on the Plan, six feet wide, and of unknown depth. Being asked, "Do you know the depth from the difference of level?" Mr. Batterbury answers, "No, I do not."

"Has that been tried?—I do not know that it has. I dip with an iron rod, and follow it back as far as it will go; and I got here to a depth of soil of 2 feet 10. That is as high as we can work in.

"You state that you could not investigate the sewer further in consequence of the depth of the soil?—No; this was so foul that I could not get into it at all.

"Is that the condition of it now?—Yes.

"Under what houses does that sewer run?—It runs under Mr. Liddell's, under Mr. Milman's fore court, in which fore court there is a privy over the sewer, to the five-hole sink-stone; it then goes on towards the school in one direction, and towards the dormitory in the other direction.

"The stench has been described as frightful; was it so when you experienced it?—Yes, it was, and a person who was not used to it could not have gone into it at all. I smelt it in the public sewer, and followed the smell. Then there is one water-closet that drains into this drain, that you can stand and look up at. It is more a privy than a water-closet; you can also see through the five-hole sink in the same gentleman's yard.

"Is it true that any variation of the wind might carry the smell from this private drain or elongated cesspool into any one of the houses connected with it?—Yes.

"And would naturally do so?—Would naturally do so."

Mr. Lovick being asked,—

"You have seen the description given by one witness, of the name of Batterbury, as to the state of the large private sewer or cesspool: what was your own experience at the time you went into it?—At this point, the junction, the depth of the deposit was about 1 foot 1 inch or 1 foot 2 inches; up at the junction of this drain connecting the two drains, the depth was 3 feet 3 inches; we could not proceed further than that, and it extended as far as we could perceive in this direction.

"You found yourself sinking, and withdrew?—I was in it, and was obliged to support myself on the sides of the sewer.

"Although you have traced this cesspool to a very considerable extent, you have not been able to get either to the superficial extent or the depth of it yet?—I have not.

"The Commissioners gather from what you have said, that you imagine it to empty itself into the large cesspool here, and to go no farther?—I imagine that there is a branch goes up here.

"Sloping which way?—I cannot ascertain whether it slopes into this or not, but at this point the soil is 3 feet deep, and here I imagine there is a large cesspool into which this goes, and very probably this likewise.

"And this cesspool you have now traced communicates with every house where there has been fever?—I could not state that off-hand, without I knew exactly all the houses.

"Those houses marked a dark (pink) colour, the Rev. E. Repton's and others (*pointing out the same*)?—At the Rev. H. Milman's this privy is an open one, having a direct communication with the sewer, so direct that we can see from the sewer to the ceiling of the privy. At this point there is a five-hole sink-stone, which has likewise an untrapped communication with this drain.

"The privy attached to the school, situate near the school entrance, has an untrapped communication with the sewer, as shown on the Plan at H. It has wooden covers to the several openings, the use of which is optional; they are, at the best, but a slight protection against the emission of the effluvia from the sewer, and can never act as preventives of the evil.

"By the entrance-door of the school, adjoining a man-hole recently bricked over

since the commencement of this inquiry, there is a very large cesspool, filled, as far as can be perceived, with foul deposit; that on the surface appears to be of recent date: its depth, and level relatively to the outlet, could not be ascertained; these points I was very desirous of ascertaining, but, as a question of prudence, it was deemed advisable not to make the opening necessary for that purpose.

"The examination of the drainage under the Little Cloisters was attended with extreme difficulty and considerable risk to health, as in some places the drains were so choked with deposit that the men were obliged to crawl along them, the watery deposit coming into their boots; from the disturbance of the foul deposit, the smells emitted were offensive in the extreme, both to myself and to the men who were engaged, who had been for years employed upon this description of work, and who complained greatly of them."

It is scarcely necessary to adduce evidence to show that in these magazines of filth noxious emanations must be generated in greater or less abundance under particular atmospheric conditions, and that these emanations must with greater or less facility be blown by particular currents of air into the houses with which they communicate.

With reference to the private sewer already described Mr. Batterbury being asked, "You have been in this sewer twice?" he answers, "Yes: on the first occasion it smelt very hot and close, and the next time I felt a draught. I thought it was a draught coming through the sewer to my forehead, as I was stooping. I was not quite sure whether it was a draught or not. I thought it was perhaps a drop of cold water, which sometimes falls. I opened the lamp to try, and it made the lamp flicker.

"Did the draught come from this drain, or where?—From the drain to me; I met it in the face; it rather astonished me to feel it.

"The draught was coming towards where?—Towards Mr. Milman's and Mr. Liddell's.

"Was it going towards Mr. Milman's and Mr. Liddell's in the direction of the houses?—Yes, it faced me.

"Going towards the house which had an open privy and a five-hole sink-stone in the fore-yard?—Yes; that was exactly the draught."

Mr. Lovick also states that on one occasion he distinctly perceived the emanations from a cesspool passing into the house. With reference to this foul sewer in particular, he says, "Smells must have come out from both this cesspool and the branches; in fact," he continues, "I am positive of that, because I experienced myself yesterday, both from the branch here, and from two or three other points connected with those drains, a strong updraught, which smelt very powerful indeed."

On hearing the description given by the Clerk of the Works to the Dean and Chapter of the various openings from this foul sewer into the houses under or near which it passes, Mr. M'Cann states his conviction, that, from the very nature of the case, currents of noxious emanations must necessarily be driven from it in certain directions of the wind into every one of these houses.

"I believe," says Dr. Reid, speaking of this district, "in the fact that there are enormous evolutions every now and then from drains of a very vitiated atmosphere. I have sufficient examples from almost every place in the vicinity to show that the connexions with the drains are of such a nature that offensive products do distil into the houses to a very great degree, and that fever too often does arise in such cases. I resided four years in their vicinity (the Houses of Parliament); every one in the family was attacked with fever. After having controlled the drains by a ventilating shaft in my own house, I still found that we were so susceptible, in particular states of the atmosphere, of the effects produced by the drains in the vicinity, that I was led by this and other circumstances to give up my residence there. I have known places where the air has been blown into a gully-hole with one wind, and come out at another at a distance; when the wind shifts, the operation may be reversed, so that, according to accidental movements of the external atmosphere, independent of movements from within the drain itself, you may have a house for a considerable time free, or for a considerable period subjected to emanations from drains. Before I left the locality I refer to, two deaths from fever occurred in one house in the vicinity, and the parties in whose house the deaths occurred lived exactly opposite one of the gully-holes."

Besides the effluvia causing noisome smells such as were felt in the School, the

evidence proves that currents of air frequently arise from the drains that have not the same pungency, but are the opposite of fresh, and are described as sometimes of a "dead" or "faint" odour, and at other times hardly perceptible. When houses that have been closed at night are entered from the fresh air in the morning, the dead, flat odour of this particular species of drain and sewer emanation is often very distinctly felt. We have not as yet had the same unequivocal evidence as to its specific effects as in the case of the pungent effluvia; but we can have no doubt that they are of a deleterious nature. All the peculiarities of the weather—the temperature, moisture, winds, &c.—appear to have an influence upon the effluvia of the drainage, by determining the kind and degree of the decomposition, and the direction and strength of the currents or draughts that pass along the drains. The products of decomposition are exceedingly various, according to the circumstances; and the degree of their concentration is also different in different situations and times. Hence, although the rise of putrid emanations of some sort or other may be constant, the emission of certain specific kinds would seem to be but occasional, being the result of combinations of circumstances that happen only now and then. It appears to be possible to make arrangements for preventing the formation of the extremely noxious matters, without removing by these means other matters that are a perpetual annoyance, and that exercise an undermining influence on the health of all persons exposed to them.

There appears to be no doubt in the minds of competent officers, nor is there any doubt on our own minds, after the best examination we have been able to give, that this private sewer, or immense cesspool, communicating with the drains from the houses, and, as far as can be ascertained, with nearly the whole of the Abbey Precinct, was the chief source of the smells complained of both before and after the fever, and before as well as after the cleansing of the cesspools. And we find the complaint of offensive smells to be very general throughout the Abbey Precinct.

Thus Mr. Liddell, the head-master, states—"There is a grating in my back-yard which does, or at least did, occasionally send up bad smells."

Of the offensive smells frequently experienced in his own house, Mr. Rigaud, the second master, gives the following description:—"Whenever there has been wet weather followed by heat, or a long continuance of wet, even without being so followed, there has always been a violent stench, very strongly affecting the health of my children, arising up at the back of the house."

"I have always experienced," says Mr. Weare, "some degree of bad smell in bad weather, though not to a very offensive degree. I do not say always in the house, but in the garden, and sometimes finding its way into the house, though not to any great extent. I had in my own mind connected such smells, in times past, with the great privy of the College, which is at the southern end of the dormitory, my house being at the northern end of the same building, and my garden being between. Whenever the weather was bad, a smell came up the drain connecting my water-closets with the College privy and the sewer in College Street.

"Did any of the family complain of the smells, have they been struck with them?—No, not during this last spring. I have three servants, and they have none of them complained of any smells during that period.

"You have not observed any particular closeness in the mornings?—I do not recollect that during the two months preceding Easter either myself or my servants complained of closeness or bad smell. There certainly is a 'closeness' in my library, which is over the water-closets on the basement floor, but the smell is not such as generally rises from a privy or water-closet. The smell of a drain, a distinct smell from closeness, has been, occasionally, perceived in the house, and more particularly in the garden, as stated before. The same smell may have prevailed during the two months preceding Easter, but I do not recollect remarking it. I may mention that during the last two months, since Easter, 1848, I have remarked the smell of a drain very frequently, even rising as high as the second floor of the house. There is said to be a defect in the sewer in College Street, which may have occasioned this smell of recent occurrence."

In conformity with this evidence are the representations given to Mr. Lovick on a house-to-house inquiry made by him with a view to ascertain the experience of the residents generally on this subject. The answers he received to his inquiries were to the following effect:—"Occasionally we have very offensive smells;" "sometimes very dreadful;" "more than ordinary at changes of the

weather;" "mostly after rain and of a dull dark day;" "or after very wet or very dry weather, and generally at every change of the weather." After a personal inspection of the sewers and drains of the whole of the Precinct, and of their mode of connexion with the houses, Mr. Lovick states it as his opinion that these smells unequivocally arise from the uncleansed and untrapped drains opening to the houses, and from the foul sewers communicating with them. "In the sewer in Great Dean's Yard," he says, "I remarked, as did also the men who were with me, a great change in the character and intensity of the smells; at this point (the entrance near College Street) it appeared like that produced by the decomposition of eggs; there was but little deposit in the sewer, and that of a sandy nature,—the emanations did not appear to be given off by that. As the sewer leading into Little Dean's Yard was approached, the smells appeared to become more offensive. Upon entering this sewer, it struck me that the smells were still more disagreeable, they were of a dead close nature; but proceeding on to the junction of the diverging drains, under Mr. Milman's, they became worse than any that I had before experienced, increasing in intensity upon the slightest disturbance of the deposit, which, as before stated, was of great depth."

On an inspection of Little Dean's Yard, it appears that in this small space, which is about 45 yards long by 35 yards wide, there are no less than seven gratings that are in fact direct openings to the foul private sewer already described, independently of two other direct openings to it and the opening of the privy in Mr. Milman's fore-court adjoining. Before the commencement of the present inquiry all these openings were untrapped. On each side of the entrance to the Westminster School is placed one of these openings, both of which are now (that is, on the day when the examination was made) in a manner trapped—one of them, by causing an additional small cesspool to communicate by means of a crooked pipe with the original larger cesspool; but it is obvious that in this way the extent of the surface of decomposing matter is increased; an attempt is made to trap the other by laying a piece of carpet over the grating, with a stone on the top of the carpet. Two of the openings are also placed at the entrance of the dormitory: so that to enter the school you must pass between two openings from this foul drain, and to enter the dormitory you must also pass between two of them.

It has been stated that the track of fever followed almost exactly the course of the foul private sewer that we have described; but to this there is an apparent exception, namely, the case of several of the boys who suffered very severely from fever, and who yet did not reside in the houses situated near this sewer or its branches. On examination, however, it is found that this apparent exception confirms the truth of the statement. In Little Dean's Yard there is a space about five yards square between the entrance door of the school adjoining the school privy and the entrance door of the dormitory; it is the space already described as having gratings, one on each side of the entrances to the school and dormitory; being openings directly communicating with this sewer. This was the spot which these boys were observed to have chosen for their play, and consequently where they were as directly exposed to the emanations of this sewer as if they had lived in any one of the houses situated over it.

This is further confirmed by the fact, that nearly if not all the Queen's Scholars attacked were juniors, whose duty it was by turns to act as janitors at this very spot.

"I have understood," says Mr. M'Cann, "that some of the boys who were taken ill were observed sitting or standing, during play-hours, upon the steps near which was a grating *untrapped*, which was over a subordinate drain, and connected with the privy of the school, along the line of houses whose inmates have been attacked with the disease. I need not tell you that a current of air rushing into any of those *choked-up* drains, full of filth and animal matter, might send up a noxious effluvium of gases through gratings *not trapped*, which would create fever in delicate constitutions and persons predisposed to malaria."

Mr. M'Cann himself furnishes a striking illustration of the fact thus adverted to, in one of the cases occurring in this very locality, and on this very occasion. The seventh case that fell under his own observation, he says, was "that of a lady in Little Dean's Yard, who was also taken ill as she was passing through and under the arches going to the Abbey service. On Sunday, the 7th of May, she describes having left her own house perfectly well, but, coming near to a point at which there is a *grating*, she felt an indescribable sensation of faintness, attended with sickness, so much so that it was with difficulty she remained during the service.

She returned home and was ill for several days, suffering from symptoms similar for the most part to those already described in the other cases."

From the investigations, then, it did not appear that the fever could be attributed to the operation of cleansing the cesspools which took place seven or eight weeks before any disease broke out, nor to the emanations from one particular emptied cesspool, nor to the operation of filling up this cesspool at the time when a severe stench was experienced in the school; but it does appear, that the large private sewer that we have described was the probable source of abundant noxious emanations, both at the time alluded to, and at other times before and after.

On examination, it was found, further, that a certain number of the cesspools, instead of being discharged into the public sewers according to the suggestions of the Commissioners of Sewers, had been pumped into this large private sewer; the matter being thus retained in greater or less quantities underneath the very houses that were intended to be relieved.

The directions given by the Sewers Commission to the officers charged with the operation are thus expressed:—"The suction-pipe should be put down into the cesspool, and the discharge-pipe should be led away through the passage to the nearest gully-shoot. The grating of the gully should be taken out, and the discharge-pipe should be put down, where it may, to the bottom of the sewer. *The water in the sewer should be penned up to receive and mix at once* with the matter discharged from the cesspool through the discharge-pipe.

"A cloth should be placed over the mouth of the gully-shoot, to keep down the foul air.

"The pump or engine may stand and be worked in the street. When the men are careful and properly trained, the work may be done with but little smell and no dirt as compared with the common method, and as much cleansing may be done in one hour by the pump as in several by the use of buckets."

It appears that the Dean, not wishing to attract notice by carrying the hose across the public thoroughfare, directed the matter to be discharged into gratings nearer at hand than the gullies of the public sewer; believing, as a matter of course, that these openings had a free communication with the main sewers. The foreman who superintended the work knew nothing of the matter; the Clerk of the Works to the Abbey, who, as has been already stated, had been in office there for nineteen years, supposed likewise that the way to the public sewer was clear. But on an examination of the spot, which we directed to be made, it turned out that these gratings, instead of communicating with the public sewers, opened into this wide cavernous private sewer.



View of the branches of the Private Sewer at their junction, showing the depth of deposit.

The instructions above quoted were issued by the Sewers Commission merely as suggestions, and had not been definitively adopted as orders by the then recently appointed Court of Commissioners, otherwise there would have been a culpable remissness on the part of the superintendent of the Commissioners' workmen in

not seeing that the operation was conducted according to the directions, by inserting the discharge-pipe directly into the public sewer, where water was pent up, to receive and flush it away at once. The consequence of the mistake seems to have been that the matter, instead of being carried off, was spread out beneath the houses over a wider surface than before.

It appears that this private sewer or cavern contained a large fœcal accumulation of a very old date. Evidence has been given of foul smells arising in the houses apparently from this source, before the occurrence of the fever; and there is no doubt that it must have always yielded a noxious evaporation, whether it had been perceived or not. We obtained no evidence as to the extent of the additional accumulation made by the matter of the cesspools being discharged into the sewer; but we caused analyses to be made of three portions of the deposit, taken from a part where a most offensive smell was given forth, and the results were as follows:—One of the specimens was merely a lump of gravel, and had very little organic matter; the other two, on being evaporated and calcined, gave forth a disgusting, fetid odour during the process, and were proved to contain both zinc and phosphates. The zinc could have been derived only from the deodorizing fluid, and its presence was the proof that some portion of the soil of the cesspools was still lying within the Abbey Precinct. It was also evident that the deodorizing liquid was incapable of rendering the soil harmless for the future; it had attacked and destroyed a certain amount of sulphuretted hydrogen, but beyond that no effect could with certainty be attributed to it. There still remained the power of generating noxious gases, and of giving off pungent, disgusting, and deadly effluvia. Thus, although the use of the cesspool pump and deodorizing liquid is undoubtedly beneficial, it cannot render the soil permanently innocuous, if it still continue to be lodged near human dwellings. We have already had occasion to notice the peculiar defect in the Abbey sewerage that led to the retention of the matter of the cesspools; and we have only further to remark that, in consequence of this circumstance, the transference of the fœcal matter from the cesspools to the large private sewer must, to the extent of the matter transferred, and in as far as it increased the evaporating surface, have put the Precinct in a worse state than before, the soil previously confined in deep pits being now spread over a wide area of shallow drains and sewers.

From the whole of the evidence, then, we are of opinion that the epidemic lately prevalent in the Abbey Precinct arose from the bad state of the sewers and drains of the Precinct, and especially from the foul condition of the large private sewer described. Indeed the construction, the mode of connection, and the level of the principal sewers of the Precinct are so faulty as necessarily to lead to the permanent retention of the greater part of the refuse matter that may flow into them. It is very possible that that portion of the contents of the cesspools which in the beginning of the year was thrown into these sewers, and which was retained in them (as is proved by the results described of the analysis of their contents), may have contributed to the production of the disease which broke out in the spring. It is certain that shortly before the first outbreak of fever there occurred two or three days of peculiarly hot weather, which came on very suddenly, and which probably promoted a rapid decomposition of this matter. The damp and foggy weather that followed was favourable to the retention in the atmosphere of the noxious products of this decomposition; and it is probable that currents of air charged with those products, issuing through the untrapped gratings with which this vicinity abounds, were blown directly into the infected houses.

It must be borne in mind, however, that whatever may be the accumulation of filth in any particular locality, all the conditions necessary to its decomposition, and to the diffusion of the products that have the greatest influence in causing disease, are not always present; and, consequently, that there may be an immunity from disease for a certain time, and occasionally even for considerable intervals. But there is reason to believe that those conditions are more constantly present than is commonly supposed, and that the presumed immunity from disease does not really exist, though it may be only at distant periods that such disease may assume the form of epidemic fever. The more closely the history of any place is examined in which the sources of disease abound, the more decisive the evidence becomes that disease is of frequent occurrence in that locality, whatever may be its reputation for health. It has been stated, for example, in respect to the Abbey Precinct, that fever is unknown there, and that there has been no instance of the prevalence of an epidemic in Westminster School. Until within the last

two years no record has been kept of the sickness prevalent in the Westminster School, so that there are no means of ascertaining its real amount; but the evidence is decisive of the frequent occurrence of fever both in the Precinct and in the School. The medical witnesses examined give positive testimony (to which we have before adverted in relation to the two cases of fever of the same type as the present which occurred in 1846, before any cleansing whatever took place) of their having attended from time to time cases of fever among the residents; and Mr. Weare, the under-master, who has been longer connected with the School than any other witness we have examined, gives the following evidence:—

"We are informed that, about the time when the Parliament Houses were burnt, there was a breaking up of the school, and that this was on account of some fever that got in; do you remember the circumstance?—No; I left school as a boy in 1832, and returned as under-master in 1841.

"Had you known of fever cases occurring before?—Yes, in the year 1843, I think there were three brothers, and two brothers, and one or two other cases of fever.

"Those were seven cases?—Yes, and there were also, I think, some cases among the town boys, or boys not on the foundation. I cannot speak to their number; my own impression is that there would be found to be two or three other cases; there were seven cases in College, and, I should think, two or three cases, if my memory serves me, among the town boys, but of the latter cases I am not sure.

"That would be at least 10 cases?—I should think 10 cases; that was in 1843; some of the cases were very serious ones, though we were not led to imagine there was any danger of a fatal termination. In one instance, the boy attacked was so ill that he could not return to be examined for the Universities; he was ill from October or November till May.

"Do you remember any other cases in the course of your period as a scholar, or service as a master?—We had scarlet fever during the time I was at Westminster as a boy, on which occasion one boy died.

"In those 10 cases you have mentioned none died?—None died in 1843. I mentioned the worst case. I thought it might be of importance to mention the length of time, as being a guide to the character of the fever.

"Was it considered as an epidemic, as a fever?—A decided fever, of what character I do not know; I suppose of a typhus character.

"All the cases were considered as analogous?—Yes, as far as I was acquainted with their character."

From a memorandum furnished by this witness "of the more important cases of sickness amongst the Queen's scholars of Westminster School," it appears further, that in 1844 there was one case of fever, and one of small-pox; in 1845, two cases of fever; in 1846, three boys were unwell for seven or eight days *with headache*, &c.; in 1847, besides several boys who suffered from colds and sore-throat, 72 were attacked with influenza, a much larger proportion than was observed to prevail in any locality not previously the seat of frequent disease: so that, even from such imperfect evidence as we have been able to obtain, it is clear that fevers and other diseases dependent on malaria are of no unusual occurrence. Still, when we reflect on the state of the Precinct as now disclosed, and on the consequences that experience would have led us to expect under such circumstances, we cannot but feel that some controlling influence, as yet unknown to us, must have been at work to render the effects of such an accumulation of filth less constant and severe than they are usually found to be.

After this exposition of the state of the Abbey Precinct, and of the causes of the sickness which has recently prevailed there, it will be scarcely necessary that we should state that it is our opinion that the actual condition of its drainage cannot be permitted to remain with a due regard to the health and safety of the boys of the Westminster School. Robust boys may take no harm, at least no immediate harm, but the tender and delicate are exposed to much risk. A year or two may elapse without the recurrence of any sensible evil; but the habitual respiration of an atmosphere loaded with so many impurities cannot but tend to enfeeble the constitution, and to render it less able to resist any sudden increase of the poison that the local circumstances may again give rise to.

The place is riddled, honeycombed, with latent sources of disease; and may serve as an example of the extent of care and labour that will be

requisite to put the older urban districts in a safe sanitary condition. All the main and branch public sewers may be reconstructed, the cesspools may be emptied, and yet the same evil effects be produced by the house-drains and private sewers being continued in their present state. Experience has already put this beyond a doubt. The main sewers have been extensively flushed and cleansed; but offensive emanations are still given forth, and are proved to arise from the house-drains. The evil has, however, been considerably abated.

The following questions were put to Mr. Lovick, the surveyor, in regard to the extent of evaporating surface to which the inhabitants of this one spot were exposed:—

"What was the extent of the evaporating surface of the cesspools cleansed?—According to the returns of the superficial area of these cesspools, the evaporating surface was about 438 square feet.

"What is the extent of the evaporating surface of the subterranean cesspools discovered, in so far as they have been explored?—Although I have been unable to measure to the whole extent to which the cesspools have been explored, their evaporating surface, inclusive of that in Little Dean's Yard, cannot, in my judgment, contain less than 2000 square feet.

"What, as far as you can judge, was the extent of the escape from the openings from those places?—Taking the aggregate superficial area of the opening from drains, &c., at 15 feet, according to Dr. Reid's formula, the escape would be at the rate of 54,000 cubic feet per hour. It is hardly possible to arrive at the correct area of the openings; the area given is as near an approximation as can be obtained. This applies only to the 'subterranean cesspools,' or drains under the Cloisters, and not to the cesspools which have been cleansed.

"Flowing at the rate of 1 cubic foot per second for every square foot of opening, how soon would such an extent of evaporation fill the houses, or the school, or the Abbey?—This question it is exceedingly difficult to answer, as there are no exact measurements, as far as I am aware, of the cubical contents of the various places mentioned; and therefore any answer must be an approximation, and must be based upon an assumption of the contents of each place, as a correct answer is not possible. If the contents of each place are assumed, an idea may be given of the rapidity with which they would be filled by the products of evaporation evolved at this rate of flow. For the purpose of illustration only—if we assume that the cubical contents of 13 of the houses in the vicinity of the Little Cloisters are 850,000 feet, that the cubical contents of the school are 148,000 feet, and of the Abbey 5,000,000 feet—at this rate of flow the houses would be filled in about $15\frac{3}{4}$ hours, the school in about $2\frac{3}{4}$ hours, the Abbey in about $92\frac{1}{2}$ hours."

At other public schools, in better and more open sites, fevers are known to have occurred recently; in these, however, we believe the neglect of drainage, the state of the site, the provision for ventilation, and the general sanitary condition to be still worse. We have already stated that we regard it as quite possible to free the Westminster School from the probability of the recurrence of any such danger.

We recommend that the whole of the branch as well as the main drainage under and about the School, and in the Cloisters, be immediately taken up, and a system of tubular drainage with adequate and regulated supplies of water substituted; that the cesspools and privies be removed, and the water-closet apparatus laid down in their stead; and that by means of efficient traps all communication with the adjoining sewers be prevented as far as that may be practicable.

Important improvements have already been introduced by the Dean of Westminster into the ventilation of the School, and into its internal sanitary arrangements: and if the suggestions we have ventured to propose in respect to drainage works are adopted, the health of the residents in general cannot but be greatly improved; while the safety of the boys will be better secured. Under such circumstances, we see no reason to apprehend a recurrence of the calamity which has led to the present investigation; nor do we see why the Abbey Precinct should not be quite as healthy as any part of Westminster.

The case which we have now been considering is one that displays the necessity of placing all the parts of one and the same system under the control and management of one and the same authority. Little good is effected by attending to the main trunks without paying the like attention to the branches, or by cleansing the large sewers and neglecting the house-drains. The combined area of the

smaller conduits of the system of sewerage is greater than that of the trunks; as the area of the capillaries of the body is greater than that of the main arteries. To flush and cleanse the great trunks, and to allow filth to stagnate and putrefy in the smaller conduits, is to remove the distant danger and to foster that which is closer and more potent. The Dean doubtless felt that he was accomplishing a great deal by emptying and cleansing so many cesspools, amounting in all to eighteen; he did not know that directly underneath the public school, directly underneath several of the houses, in close proximity with others, and communicating more or less remotely with all, there existed and had existed for years an immense depôt of filth, fourfold more extensive (taking only the part already explored) than the entire surface which had been cleansed; an accumulation of filth on the dangerous nature of which all the medical witnesses strongly insist, of whose existence the residents had no suspicion, and which was so entirely unknown even to the officer specially charged with the care of the sewerage of the place, that he declares its direction, its extent, and its condition, to be all "a mystery." Under such a system as we contemplate, and of the absolute necessity of which we regard this as a striking example, this degree of ignorance would be impossible: the position of every conduit, however small, of every house-drain, as well as of the larger branches and of the main trunks, would be recorded, and the preservation of this knowledge would not be allowed to depend on the traditions of the workmen, superintendents, and owners, but would be secured against the possibility of loss or error by plans carefully kept and duly corrected from time to time. The public sewers may be kept in good order, and danger may be so far averted or lessened, and yet accumulations, the real and constant though unsuspected source of disease and death, may continue to exist close to dwelling-houses and even within them. Though the Sewers Commissioners with the powers they already possess may accomplish some good, yet, in spite of their utmost activity and skill, the public in every part of the metropolis must be constantly liable to casualties similar to what has befallen the Westminster Precinct, until such time as the whole of the sewerage and drainage is brought under one and the same system of management, and is combined with properly regulated supplies of water. Notwithstanding the expositions that have been given of the principles of this system, the conviction of the necessity of its being publicly applied, and particularly the conviction of the indispensable necessity of the combination of the house-drains with the main sewers, and of the whole with an adequate system of water supply, appears as yet to have pervaded only very limited circles; it certainly has not awakened general attention, nor is the consideration of it as yet even entered upon by Parliament.

It is the peculiar disadvantage of this question and the great obstacle to its progress, that to understand it aright requires a specialty of knowledge not to be acquired without some study, and which is certainly not in general possessed by professional persons. The inadequacy of common and even eminent architectural knowledge, for example, to accomplish what would at first view appear to be the very simple work of putting the house-drains in proper relation with the sewers, and of combining both as necessary and dependent parts of a general system, is exemplified in the arrangements recently made for the drainage of the New Houses of Parliament. The construction and working of the drains and sewers of the New Houses of Parliament are thus described in a letter to the architect in 1846:—

"There are two flaps placed across the sewer from the New Houses of Parliament, one of which is made of slate, and is fixed close to its junction with the sewer in Abingdon Street, and the other is made of wood, and is fixed about 60 feet backwards from it. These flaps are very heavy and clumsy, and are badly constructed for allowing the water and sewage to run off freely. This sewer is on the same level as the one in Abingdon Street, and its bottom for a few feet outside each flap is sunk about nine inches, so as to allow the flaps to close the sewer; consequently the water and deposit outside, by pressing against them, prevents the sewage inside, until it accumulates to a great extent, from forcing them open.

"From the bad construction, therefore, of these flaps, as well as the improper form and levels of these sewers themselves, the sewage is being constantly pent back, and the sewer under the New Houses of Parliament forms, as it were, an elongated cesspool, the great evil of which must eventually be very obnoxious and injurious. Both sewers now contain a large accumulation of soil."

Another circumstance unfavourable to the progress of this question is, that, after long residence amidst such influences as prevail in Westminster and the metropolis generally, comparatively few retain the power of appreciating them; so that not only the emanations from beneath pass without notice, but those on the surface, and even those that assail the senses, often escape observation. In the course of our inquiries we have frequently found that the residents of extremely filthy courts and houses, in which the closeness and stench to the visitor were most offensive, have declared that they seldom perceived any disagreeable smell.

"In many instances," says Mr. Lovick, "for so long a period and so constantly have the emanations been given out, that smells which are highly offensive to strangers are not noticed by inmates, or even perceived until increased in their intensity by a change of weather."

"It was no uncommon thing," says Mr. Bowie, "to be told, in places smelling abominably, that there was no disagreeable smell; and by the most sickly-looking persons, that there had been no sickness. In many instances, where the most miserable localities were greatly belauded, it was plainly to be discovered that the fear of the landlord was the influencing cause, the truth only coming out when some evil pressing hardly upon them was adverted to. As to *good* health, I do not believe it exists among those who have resided any length of time in such places. Life may last for years under very unfavourable circumstances, the human constitution often bending, instead of breaking altogether; but the results are seen sooner or later in the sickly looks of the parents and the stunted forms of their offspring. A mist or cloud has been represented as hanging over and enveloping certain districts of London; where not visible, it may always be detected by the unmistakable smell with which it would be accompanied."

Many persons are insensible to the noxious odours that pervade the atmosphere close to Parliament itself, and which are constantly breathed by its members. Speaking of this want of power to appreciate the true nature of an atmosphere to which we are accustomed, Dr. Reid says, "I can give you what I think is perhaps as notable an instance of it as can well be brought forward, that is, that the air in the interior of Westminster Abbey was considered so pure before it became the subject of special investigation, that it was proposed to supply the Houses of Parliament from it, taking in fresh air by the towers; but if any person will go to the north door of the Abbey on a fine day when there is only a gentle movement of the air, and stop when the door shall be opened, a rush of cold air will take place outwards which is perfectly funereal in the odour which it presents; and I merely adduce this as an example of the fact, that people in general are really not aware of the nature of the atmosphere with which they are surrounded; and that, in consequence of being habituated to the Westminster atmosphere, they actually consider the air within the Abbey pure, instead of merely allowing for the refreshing effect produced by its coldness in warm weather. Were means taken to permit air to enter freely into the Abbey in fine and warm weather, by opening the doors freely, and by permitting an equivalent interchange by the roof, the oxydation of the condensed exhalations with which the walls are saturated, especially if assisted previously by some gaseous chemicals, would soon place the atmosphere in the Abbey in a much more wholesome condition than it is at present."

The existence of any emanations from the contiguous grave-yards has also been denied by some persons; but respecting this matter Dr. Reid makes the following statement. Being asked, "Have you ever seen any persons at all who have distinctly perceived, and have you perceived yourself, emanations from the burial-ground of St. Margaret's Church?"—he answers, "Times without number. I crossed the churchyard from two to eight times daily for several years, and I have been repeatedly called by the Members attending on the Committees opposite, or in the House, to the state of the atmosphere, and I have taken them to the very spot from which it was perceived. I received the information on these occasions from Members anxious to let me know the truth. On one occasion I noticed that five graves sunk in a day to the depth of 6 to 9 or 12 inches, from the subsidence of the body; and there was a Committee of the House of Commons at which the librarian and others gave evidence in respect to the grave-yard. The librarian said, 'When I have left the House very late at night, and have gone across the churchyard, the smell has been very offensive, so much so as to make me rush out of the churchyard.' I have brought with me the Report of a Committee in the year 1808, which recommended that the churchyard should be removed on account of the same causes.

"Stating their perception of its noxiousness?—Yes."

Residents in the Abbey Precinct say that they believe the place to be healthy, they having had general good health, and few particular illnesses; but the pallid aspects of many of them give unmistakable indications of the character of the place. Occasional residence in the country improves the hue and increases the general tone of health and vigour of the robust, and for the time restores the weakly; but the effects of impure air upon children and susceptible persons on their return home are as sure a test of the quality of the air as litmus is of the presence of an acid, and these effects are seen in pallid countenances, weakened appetites, and reduced strength.

The fever that has lately visited the spot in question would not be regarded as an unusual or very severe attack in a court or alley, where sometimes every house and even every family is infected, and where the usual proportion of deaths is very much higher than in the instance before us; but had it in these times occurred in a prison, it would have been considered most extraordinary and as affording presumptive evidence of some mismanagement. Out of 36 cases there were three deaths; or the proportion of deaths to attacks was one in twelve; the average proportion being about one in six. The visitations here are only occasional, but fever has never been absent from some of the poorer places of the neighbourhood. Dr. Aldis, Physician to the Western Dispensary, states that there were, in the eight weeks from April 1 to May 25, 59 cases of typhus attended to by the Dispensary in the parishes of St. Margaret and St. John. He states also, on the authority of the Registrars, that 79 deaths from epidemic disease occurred in these parishes between the beginning of February and the latter end of May, which would imply at least from 400 to 500 attacks in less than four months. Further, the cases of fever admitted into Westminster Hospital from the beginning of the present year to the 20th of May amounted to 69; and the total number admitted in 1847 was 223. Both the Dispensary and Hospital returns show frequent coincidences in the localities where the greatest number of cases are found. Thus, Old Pye Street occurs in both returns, and shows 13 cases.

The deaths from epidemic disease in St. Margaret's and St. John's, in 1841, amounted to 346, implying several thousand attacks. Of this number, 9 are described as of the class of gentry; 47, tradesmen; and 264, artisans, &c. Compared with the population, this mortality is about double the mortality from epidemics in Kensington, Islington, Poplar, and Marylebone.

The following is the complete Table of Mortality for the whole district for the year 1841:—

ST. MARGARET AND ST. JOHN, WESTMINSTER.—Population, 56,718.

CLASS.	Number of Deaths of each Class.			Deaths from Epidemic.	Average Age at Death of all who die above 21.	Average Age at Death, including Children.	Average Premature Loss of Life.		Proportionate Number of Deaths to Population.	Excess in Number of Deaths above a healthy standard.
	Adults.	Children under 10.	Total.				By Deaths above Age of 21.	By Deaths of all Classes.		
					Years.	Years.	Years.	Years.		
Gentry	37	14	51	9	55	42	7	..		
Tradesmen . . .	82	102	184	47	46	20	16	19		
Artisans, &c. . .	458	581	1039	264	48	21	14	18	1 in 39	521
Undescribed . .	38	24	62	9	56	49	6	..		
Paupers	97	19	116	17	57	46	5	..		
Total . . .	712	740	1452	346	..	..	..	..	..	..
Averages . .	..	..	..	..	50	25	12	14	..	..

Mr. George Pearse, the Registrar for the St. John the Evangelist district, in commenting on this table, thus describes the condition of the places in the lower districts, where the greatest mortality occurs:—"Great Peter Street, Perkin's

Rents, Duck Lane, and Old Pye Street, are the most densely populated in the district. The houses in Great Peter Street for the most part are very old, irregular, and uncleanly, and are occupied by tradesmen and small shopkeepers, together with labourers, mechanics, and others of uncertain earnings. The houses in the other three streets are often occupied by 10 or 12 persons in one room, most of them of the lowest grade in society, such as mendicants, hawkers, costermongers, lodginghouse-keepers, thieves, and abandoned females of irregular and intemperate habits. Their food chiefly consists of salt-fish and other scraps, collected by the mendicants and disposed of to the general dealers. The houses are for the most part very low, filthy, and dilapidated, badly drained, and indifferently supplied with water. There are other unwholesome nuisances arising from the collecting and boiling bones, soap and tallow, &c. Holland Street, Medway Street, Marlborough Place, New Peter Street, with several other avenues, surrounding an extensive waste (formerly the site of Marlborough Square), are oftentimes nearly covered with stagnant water. The houses are small, very dirty, and dilapidated, low in situation, without any drainage, having stagnant waters back and front; some are in the occupation of the labouring class, and laundresses low in the scale, irregular in their earnings and habits. Many cases of typhoid fever have occurred here, and several recently. Rochester Row, Strutton Ground, and Artillery Square, are thickly populated by tradesmen of all kinds and others; they are without sewerage or proper drainage; the first has an open ditch through the centre for the greater part; and the occupiers of the last are under the necessity of pumping out into the open street (generally at night) the offensive water that collects in the cesspools within their dwellings. In part of Vauxhall Bridge Road, which is contiguous to Douglas Street, Bentinck Street and Place, with sundry other small streets or places communicating with them on the one side, and Upper and Lower Garden Street with Dean's Place on the other, the houses are small and numerous; inhabited by labourers, laundresses, costermongers, and others; without proper drainage, having open ditches and stagnant waters in their vicinity. Typhus and scarlatina have been frequently here, and several deaths therefrom have occurred within the last few weeks. In Causton Street the houses are small, populous, with courts or places occupied by labourers generally, and an open ditch in front. Ship Court, with Cottage Place, is situated very low; it is composed of small, ill-ventilated, dirty, dilapidated houses; thickly inhabited by labourers and others of very low and irregular earnings and habits; adjoining several large dilapidated premises, with extensive wastes or yards used as pig and cow yards, or for the purpose of collecting slop-soil and other filth, which is left evaporating in the open air, there being no sewerage or proper drainage. Vine Street, with Champion's Alley, York Buildings in Grub Street, on the one side, and Scott's Rents on the other, for the most part are small old houses, peopled by the labouring classes, with bad drainage, and adjoin the wharves in Millbank Street for the deposit of slop-soil and other nuisance."

There is a marked correspondence of the places here alluded to with the localities of the fever-cases enumerated in the returns above quoted from the Westminster Hospital and Dispensary. Thus Old Pye Street has yielded 28 of those cases; Great Peter Street, 17: and among the other streets mentioned in the Fever Returns are Perkin's Rents, Duck Lane, Holland Street, Medway Street, New Peter Street, Rochester Row, Strutton Ground, Causton Street, Ship Court, Vine Street, &c.

The following proximate estimate has been made by Mr. Phillips, surveyor to the Metropolitan Sewers Commission, in order to convey a conception of the extent of noxious matter requiring removal in the metropolis at large:—

"At the last census, in 1841, there were 270,859 houses in the metropolis. It is known that there is scarcely a house without a cesspool under it, and that a large number have two, three, four, and more under them, so that the number of such receptacles in the metropolis may be taken at 300,000. The exposed surface of each cesspool measures on an average 9 feet, and the mean depth of the whole is about $6\frac{1}{2}$ feet; so that each contains $58\frac{1}{2}$ cubic feet of fermenting filth of the most poisonous, noisome, and disgusting nature. The exhaling surface of all the cesspools ($300{,}000 \times 9$) = 2,700,000 feet, or equal to 62 acres nearly; and the total quantity of foul matter contained within them ($300{,}000 \times 58\frac{1}{2}$) = 17,550,000 cubic feet; or equal to one enormous elongated stagnant cesspool 50 feet in width,

6 feet 6 inches in depth, and extending through London from the Broadway at Hammersmith to Bow Bridge, a length of ten miles."

This, there is reason to believe, is an under estimate. The cesspool, however, in general forms but one-fourth of the evaporating surface: the house-drain forms half or two fourths, and the sewer one; but, connected as the sewers and house-drains mutually are, and acted upon by the winds and barometric conditions, the miasma from the house-drains and sewers of one district may be carried up to another. We cannot be absolutely certain that part of the stench experienced in the Dean's Yard may not have been due to the contents of the sewers from the drains of the House of Commons, or at some time from Duck Lane or Pye Street; and, according to the evidence of Mr. Batterbury, who met a strong current of air coming *from* the extended cesspools near the school, the miasma from that place would have been carried through the common sewers, and from them into the streets and houses of other neighbourhoods.

In addition to the examination of the old sewers conducted by Mr. Joseph Smith, one of the assistant surveyors, and adverted to in his evidence, the Metropolitan Commissioners of Sewers have directed an inquiry to be made into the state of the house-drains. From the evidence of Mr. Lovick, the assistant surveyor who conducted this inquiry, it appears that much larger sums are paid for cleansing and keeping in repair the private drains than the public are in general aware of. The returns of information from the inhabitants had not been completed, but from such as were obtained it was found that the average annual charge of cleansing and repairing the house-drains was 1*l.* 5*s.* per house per annum, and for emptying the cesspools 15*s.* per annum; making 2*l.* a-year for this one portion of house cleansing. But the returns contain instances where sums of thirty, forty, fifty, a hundred, and even two hundred pounds, have been paid for amending and reconstructing house-drains; and notwithstanding such outlays, the foundation walls have continued damp, stagnant water has remained in the cellars, and offensive smells have still been emitted. In 21 houses in the Westminster district the average annual charges during ten years, for making, repairing, and cleansing the house-drains, was 7*l.* 6*s.* per house, and for cleansing the cesspools 2*l.* 4*s.*, in all 9*l.* 10*s.* Now, from estimates which have been made of the cost of abolishing the cesspools, and putting down in their stead new and improved impermeable house-drains, which would remove at once all decomposing matter from the houses—supposing the work done upon a comprehensive contract and paid for by the rates—the average expense of complete house-drainage, on the charge being distributed over a period of 30 years, would be about 4*s.* 6*d.* per house per annum, and for the highest class of houses about 7*s.* 6*d.* per annum; which would be an average saving, on each of the twenty-one houses above mentioned, of more than nine pounds a-year.

After having devoted to the examination of the circumstances attendant on the fever that has occurred in this small locality an extent of labour that might have sufficed to investigate the sanitary condition of a large mass of the population, we have found on the whole;—

That whereas it has been stated that fever broke out immediately after the cleansing of the cesspools, the fact is found to be that eight weeks elapsed between the emptying of the last cesspool and the first case of fever; a period which, according to the predominant medical testimony, puts out of the question that operation as an exciting cause of fever, even if it had been performed in such a manner as to evolve large quantities of noxious gases, instead of by a method which produces incomparably less effluvia than any process heretofore known.

That whereas it has been stated that the fever was of an entirely new type, such as had never been seen or observed before in that or any other place, the fact appears to be, that the type is one well known and recognised as prevalent for years past in that very locality and neighbourhood, as well as in all other parts of the metropolis.

That whereas it was stated that fever was entirely unknown before in the place in question, the fact appears to be, that fever had occurred there the year before, and also in 1846, as testified by Dr. Basham, and cases had occurred in former years; and although no regular record has been preserved, there is good reason to believe that epidemics have from time to time occurred there, and that there has been no such entire previous exemption as reputed.

That whereas it was represented that there was an excess of fever cases in the Westminster district after the cleansing operations, it appears, from particular inquiries in the places cleansed, that there has been a decided reduction in the sickness experienced, and throughout the district a less amount of sickness than previously.

That whereas it has been stated that an offensive smell was perceived in the school, produced by the filling up of a cesspool that had been cleansed some weeks before, the fact is found to be that this particular cesspool gave out no unusual smell on that occasion, but that the smell complained of probably arose from the emanations given off from a large cesspool which had never been cleansed at all, and which communicated with the whole line of a foul sewer passing directly under the vestibule of the school; the evaporating surface of this sewer, as far as it has been possible to explore it, which is only through a comparatively small part of its course, being estimated at 2000 feet; or more than four times the surface of the 18 cesspools emptied in the early part of the year.

That the course of the disease followed very exactly the line of this sewer, which communicates by direct openings with several of the houses where fever broke out, passes directly under the vestibule of the school, is in close proximity with the dormitory and with nearly all the houses in which fever occurred, and is in so foul a state that the officers of the Metropolitan Sewers Commissioners, accustomed as they are to such examinations, were absolutely unable to proceed along it beyond a certain point, so that beyond that point it still remains unexplored.

That the public sewers of the neighbourhood were comparatively clear of deposit, and gave off but a very small amount of effluvium.

That, if the private drains and the large branch sewer, which were by mistake surcharged with the soil from the cesspools, had been perfectly cleared out when the cesspools were emptied, the probable source of the extraordinary sickness and mortality would have been removed, and the health of the inhabitants in general as certainly promoted, as the health of the porter of the Cloisters and his family seems to have been improved by the emptying and filling up of the cesspools underneath his house.

That the probability of the recurrence of a similar visitation will be diminished to the extent that the cleansing of the present house-drains and branch sewers, and their substitution by a perfect drainage apparatus, are completed; excepting always the more remote and accidental emanations from adjacent districts that may remain uncleansed, from which it may be difficult entirely to protect the School or the Abbey Precinct.

That the present occurrence is an impressive example of the great mistake that has hitherto prevailed, in supposing that the jurisdiction of the Courts of Sewers fully comprehends all or the most important cleansing works that have the most direct influence on the public health; it also shows the casualties and disappointments that must happen, wherever a system of operations is restricted to the public sewers, and where the private drains and cesspools are left to the ordinary separate treatment, that is to say, neglected.

That the main sewers, or the portion of the drainage system under the jurisdiction of the Court of Sewers, supposing them to be in a foul state, present only one-fourth of the entire evaporating surface of noxious gases, that fourth being for the most part the farthest removed from the general population, and consequently its cleansing will afford only a fraction of relief; that the cesspool surfaces make nearly another fourth; while the private house-drains supply full two-fourths of the noxious evaporating surface, which portion closely besets the dwelling-houses, and has its effluvia circulated through the main sewers.

That, from inquiries made in relation to the expenses of cleansing and repairing the house-drains that exist in the district, it appears that those expenses are considerably greater to the householders or owners than would be the expense, under proper legislative and administrative arrangements, of abolishing all the cesspools and maintaining a complete soil-pan apparatus and impermeable soil-drains, by which the lodgment of refuse and the escape of the noxious gases of decomposition would be entirely prevented.

That, imperfectly as the recent operations of cleansing would seem to have been conducted by the men employed by the Commission of Sewers, they have been everywhere productive of benefit, and have given satisfaction to the parties immediately affected by them; and, as measures of partial and temporary relief, and until new and complete drainage-works are laid down, they ought to be prosecuted

as extensively and efficiently as possible; but that any delay in making adequate legislative provisions for conferring powers and imposing obligations as to the improvement of house-drainage and the abolition of cesspools is a delay in the removal of the most extensive sources of disease and mortality.

All which we humbly certify to Your Majesty.

(Signed) ROBERT GROSVENOR. (*L.S.*)
EDWIN CHADWICK. (*L.S.*)
T. SOUTHWOOD SMITH. (*L.S.*)
RICHARD OWEN. (*L.S.*)
RICHARD LAMBERT JONES. (*L.S.*)

Gwydyr House, Whitehall,
13*th July,* 1848.

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4. D Buchanan

GENERAL BOARD OF HEALTH.

REPORT

ON THE

SANITARY CONDITION OF THE EPIDEMIC DISTRICTS

IN THE PARISHES OF

ST. MARGARET AND ST. JOHN, WESTMINSTER,

WITH SPECIAL REFERENCE TO THE THREATENED VISITATION OF EPIDEMIC CHOLERA.

BY

JOHN SUTHERLAND, ESQ., M.D.,

MEDICAL SUPERINTENDING INSPECTOR.

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ST. MARGARET AND ST. JOHN, WESTMINSTER.

Report on the Sanitary Condition of the Epidemic Districts, with special reference to the threatened Visitation of Cholera.

My Lords and Gentlemen,—In compliance with my instructions, I have made inquiries as to the present state of the public health in the parishes of St. Margaret and St. John, Westminster, and into the condition of those districts which are the usual seats of epidemic disease, and where Cholera was formerly localized. I have received information from the District Registrars, and also from medical practitioners specially conversant with the most unhealthy localities in the parishes, besides having inspected a number of them personally; and I now beg respectfully to report the result of the inquiry.

There has, I believe, been no case of Cholera recently in either of the parishes. Diarrhœa was, however, very common some weeks ago, but it has now subsided. Scarlet fever is very prevalent. There has been an unusual number of cases of small-pox, and in some localities continued fever exists at the present time.

The zymotic diseases now occurring are localized in those parts of the parishes where Diarrhœa and Cholera are usually found. It may not be out of place to remark, that in 1848, before the last epidemic Cholera invaded this district, the same class of zymotic cases which now prevail were very numerous.

Dr. Wright, in his evidence before the Metropolitan Sanitary Commissioners in that year, says, "In the courts and alleys,—the low neighbourhoods,—fever has of late been very severe there. . . Within the last four months I have had nearly 200 cases of measles, and now scarlet fever is prevalent. Whenever there is an epidemic we have it on a large scale."

It may be useful, for the sake of information, to trace briefly the history of epidemic disease in this district of the metropolis since the Cholera of 1832.

In that year the mortality from the epidemic was about 1 in 384 of the population. Dr. Wright, who attended Cholera cases for the parishes in 1832, states, in his evidence referred to above, that the disease occurred in "the low, ill drained, and ill ventilated places,—the low courts and alleys, in which a large proportion of the population live."

Seven years after the first visitation of Cholera, that is to say, in the year 1839, the following was the ratio of epidemic disease in the parishes. The population was then 56,718; the deaths from all causes, 1,452, or 1 in 39 of the population. This mortality exceeded that due to a healthy standard by 521, or above 35·8 per cent. The deaths from epidemic disease in the same year were 346, about $23\frac{3}{4}$ per cent. of the entire mortality.

The annual deaths from all causes, from the year 1838 to 1844 inclusive, were as many as 26 in 1,000 inhabitants.

In reply to queries given in the Report of the Registrar General in 1843, Mr. Pearce, Registrar of St. John's district, names the following streets, &c. as being unhealthy, and assigns the local causes:—

"Great Peter-street, Perkins-rents, Duck-lane, and Old Pye-street are the most densely populated in the district. The houses in Great Peter-street, for the most part, are very old, irregular, and uncleanly, occupied by tradesmen and small shopkeepers, together with labourers, mechanics, and others of uncertain earnings. The houses in the other three streets are often occupied by ten or twelve persons in one room, most of them of the lowest grade in society, such as mendicants, hawkers, costermongers, lodging-house keepers, thieves, and abandoned females of irregular and intemperate habits. Their food chiefly consists of salt fish, and other scraps collected by the mendicants and disposed of to the general dealers. The houses are for the most part very low, filthy, and dilapidated, badly drained, and indifferently supplied with water. There are other unwholesome nuisances, arising from the collecting and boiling bones, soap, and

tallow, &c. Holland-street, Medway-street, Marlborough-place, New Peter-street, with several other avenues surrounding an extensive waste (formerly the site of Marlborough-square), oftentimes nearly covered with stagnant water. The houses are small, very dirty and dilapidated, low in situation, without any drainage, having stagnant waters back and front, some in the occupation of the labouring classes, and laundresses low in the scale, irregular in their earnings and habits. Many cases of typhoid fever have occurred here, and several recently. Rochester-row, Strutten-ground, and Artillery-square are thickly populated by tradesmen of all kinds, and others; they are without sewerage or proper drainage, the first having an open ditch through the centre for the greater part, and the occupiers of the latter are under the necessity of pumping out into the open street (generally at night) the offensive water that collects in the cesspools within their dwellings. Part of Vauxhall Bridge-road, which is contiguous to Douglas-street, Bentinck street and place, with sundry other small streets or places communicating with them on the one side, and Upper and Lower Garden-street, and Dean's-place on the other. The houses are small and numerous, inhabited by labourers, laundresses, costermongers, and others, without proper drainage, having open ditches and stagnant waters in their vicinity. Typhus and scarlatina have been frequent here, and several deaths therefrom have occurred within the last few weeks. In Causton-street the houses are small, populous, with courts or places occupied by labourers generally, and an open ditch in front. Ship-court, with Cottage-place, is situated very low, composed of small, ill ventilated, dirty, dilapidated houses, thickly inhabited by labourers and others of very low and irregular earnings and habits, adjoining several large dilapidated premises, with extensive wastes or yards, used as pig and cow yards, or for the purpose of collecting slop-soil and other filth, left evaporating in the open air, without sewerage or proper drainage.

"Vine-street, with Champion's-alley, York-buildings in Grub-street, on one side, and Scotts-rents on the other, for the most part are small old houses, peopled by the labouring classes, with bad drainage, and the wharfs in Millbank for the deposit of slop-soil and other nuisances."

After the lapse of other five years, in 1848, Mr. G. Wilson, who had been secretary to the Board of Health of the parishes of St. Margaret and St. John during the Cholera of 1832, gave the following evidence before the Metropolitan Sanitary Commission:—

"In respect to drainage and sewerage, water supply, and the means of cleansing, how far do you consider that it (the condition of the labouring population in the parish) is altered?"—"With respect to the greater proportion of the parish, I believe it is exactly as it was: from Palace-street, down York-street and Tothill-street, with the streets branching out right and left therefrom, there was, and there is, nothing but a surface drainage. The basements of the houses lie several feet below that surface drainage, and in order to get rid of the offensive liquids, the inhabitants of the houses pump it from the basements into the streets. In many cases the pumps draw up the matter from the cesspools into the street. In Palace-street they pump up the soil into the street, and there it lies until the God-send of a shower clears it away. We feel for the people because they cannot inhabit the basement floors unless they do this. But this is the condition of a street close to the Palace, and the occupants of a property which belongs to the Crown."

"Are other parts of Westminster in an equally bad condition?"—"I own some houses in Dartmouth-street, and my tenants are obliged to do the same. I think many parts of the district would be uninhabitable, but that there is a substratum of gravel, through which the offensive liquids percolate."

"What is the condition of the wells in Westminster?"—"Really, it would be well not to think about that or we should deteriorate the property of the district." The witness further states, "That there had been new sewers made in some parts of the parishes, but they had been productive of very little benefit, and that they produced offensive smells."

It would thus appear that the epidemic districts of the parishes had undergone no improvement in the interval between the two attacks of Cholera. The population in 1849 had risen to 64,109, and there were 437 deaths from Cholera in that year, or 1 in about 147 of the inhabitants. There were besides 112 deaths from Diarrhœa, which, if added to the deaths from Cholera, would raise the mortality from the epidemic to 549, or 1 in 117. The following were the proportion of deaths in each district, and the local-

izing causes as stated in the notes of the registrars:—

St. John's District.

Deaths, 1849.—Cholera, 212; Diarrhœa, 60.
Deaths from Cholera to 10,000 living = 62.

The classes chiefly attacked were mechanics, labourers, and their families residing in—

Regent-street.	Lower Garden-street.
Douglas-street.	Emery-cottages.
Chapter-street.	Edward-street.
Causton-cottages.	Duck-lane.
Dorset-street.	Rochester-row.
	&c.

The following are the Registrar's notes on a few of the cases:—

Dorset-street.—"Son of a stonemason; Cholera, eight hours. In this house one man had lost all his family, to wit, his wife and two children, and another person lost one child. The house consists of six rooms, not by any means in a confined situation. It appears cleanly, and well supplied with water, but the occupier says there are two gratings in the yard from which stench arises, and the drain which carries off the soil from the privy in the yard runs under the house, and is defective."

Douglas-street.—"Of the fourteen deaths which occurred in Douglas-street eleven took place on the south or lower side. The houses consist either of three or four rooms, but are situated so low that, for the most part, there is a descent of one or two steps from the foot pavement to the entrance passage. The drainage is extremely defective, and several of the occupants complain of the nuisance from the laundresses throwing their dirty soap suds into the street, leaving continually black stagnant puddles along the gutter in front of these houses, even in the driest weather."

Upper Garden-street.—"Son of a labourer; Cholera, five days. The parents, with six children, were living in a kitchen. One child died on the previous week, and other children of the same parents were attacked."

Hugh-place, Vincent-street.—"Second death from Cholera in this house."

Regent-street.—"The third death from the same cause in this house during three weeks."

Lower Garden-street.—"The sanitary condition of this street is truly wretched. It is situated extremely low, with inefficient drainage; the houses old and ill cleansed, and many deaths from Cholera have taken place in it."

St. Margaret's District.

Deaths in 1849.—Cholera, 225; Diarrhœa, 52.
Deaths from Cholera to 10,000 living = 72.

The working classes and their families were the greatest sufferers in this district, and the places chiefly attacked were—

Tothill-street.	York-street.
Gardners-row.	Providence-row.
King-street.	Palmers-village.
Willow-street.	York-street.
Trenter's-place.	&c.

The Registrar adds the following note on the localizing causes of the epidemic:—

"A remarkable fatality was observed in those localities in which there existed surface drainage, overcrowded dwellings, insufficient supply of water, and obstructed ventilation."

It will be observed, that the sanitary conditions brought prominently forward in the preceding evidence, as specially determining the localization of epidemic disease in this portion of the metropolis, are defective drainage and sewerage and overcrowding.

The whole district resembles in these respects the districts on the south side of the Thames. It is only about two feet above Trinity high-water mark, and cannot consequently be thoroughly drained with the ordinary fall. The subsoil is porous, and admits of percolation and admixture of fluids within it, such as is hinted at in Mr. Wilson's evidence. It was, I believe, found that the execution of the new sewerage in Victoria-street drained the wells, a pretty strong proof of the source from which a portion, at least, of the well-water is derived, and showing how little the public is aware of those subterranean causes which are always in operation in lowering the health of the inhabitants in cities where there is no proper system of drainage and water supply. Cesspools sunk in porous soils are an important source of the water which is pumped up from wells in their vicinity. This is a fact which has been long known in regard to the metropolis, many parts of the subsoil of which have become so saturated in the course of ages with the fœtid contents of cesspools, that their presence can be easily detected in the well-water. There can be little doubt that inattention to this circumstance was one

reason of the ravages of plague in the middle ages, as it still is of the ravages of Cholera, and other severe forms of zymotie disease. It is probable that no praetieable amount of drainage would prevent the pollution of shallow wells in densely peopled eities, and henee the neeessity for an independent water supply brought from a distanee.

The population in the parishes of St. Margaret and St. John is very mueh overerowded. According to the census of 1841 there were no fewer than 8·8 persons to each inhabited house, an average suffieiently high to prove that the lower elass of houses must be very densely peopled.

I shall next proceed to consider the sanitary eondition of the epidemic loealities at the present time. The evidence I have reeeived from persons acquainted with the worst distriets agrees in stating that, since 1849, there has been an improvement in them in several particulars. Several of the epidemie localities have been opened up and better ventilated by the pulling down of houses for the new streets, and one district,—Palmer's-village,—has been removed. A eonsiderable extent of main sewer has been laid down in the line of Vietoria-street, and in the neighbourhood. The paving is improved, and there has been an extension of flagging in courts. There are fewer nuisanees, and the eleansing is said to be better done. The supply of water has also been increased in the poorer districts. Both medieal officers and registrars eoncur in stating, that there has also been an improvement in the public health sinee these ameliorations have been in progress. I have been informed that the inspection of lodging-houses under the Common Lodging-houses Act is being efficiently carried out in the parishes.

I have personally inspeeted a considerable number of the epidemie loealities. They have at the present time the usual well-marked features of sueh districts. They are low-lying, badly drained, and eonsequently damp. In many instanees there are cellars almost entirely below the level of the street, and the floors of the houses are very frequently a foot or more below the same level. The ground is elosely covered with houses. There are many narrow courts with an extremely defeetive ventilation. The houses look old, dirty, and not a few of them dilapidated, and are very generally mueh overcrowded.

In most instances there is an open privy, either over a cesspool or drain, for a number of houses. They are generally in a most offensive and unwholesome condition, and are a serious cause of atmospheric impurity. The cesspools frequently overflow, and although they are then cleansed as nuisances, the real evil remains nearly as great as before.

I saw one instanee in Grub-street of an open privy and cesspool, with a collection of house refuse, in the basement story of a house, the exhalations from which passed upwards by a staircase into the dwelling-rooms above. The effluvia are usually most offensive, and the inhabitants suffer much from siekness, especially Diarrhœa.

Generally speaking, the bad condition of the drainage in eourts and back yards, can be deteeted by the smell.

I may mention, as an illustration of this fact, a small court ealled Tripp's-buildings, in which there are two houses. The flagged surface was broken. There was an open privy,—a collection of refuse at one end, and a grating for surface-water in the middle. The atmosphere smelt offensively; and my informant, Mr. Pearse, who is a surgeon, as well as Registrar of the distriet, stated that there was generally some one ill in one or other of the houses.

It appears not to be an unusual practice to carry briek-drains from the privies in the baek yards underneath the houses, so as to injure the health of the inmates. In a clean well flagged court, called Shepherd's-place, this reprehensible custom gives rise to nuisance within the houses; and one of the inhabitants stated that sickness was not unfrequently occasioned by it.

The following example of the production of fever by the same cause, has been communieated to me by Mr. Tebay, one of the parochial surgeons. In a house in Charles-street, the privy soil had escaped under the flooring of the sitting-room, so that part of it became rotten, and had to be replaced. At that time, and ever sinee, an offensive smell has pervaded the house, and latterly has become so bad as to be unbearable, especially if the window were shut and a fire in the room. This sitting-room is tenanted by a man and his wife, and the room above by their married daughter and her husband. All four have recently suffered from fever. The two who lived below were both seized with typhus, and one of them is still very ill. The

daughter and her husband, apparently from being further removed from the local cause, suffered less severely, one having had continued fever of prolonged duration, and the other nervous fever, the blood having been evidently poisoned by gaseous exhalations.

The epidemic courts out of Old Pye street are still in a very deplorable condition. The surfaces of some of them are very imperfectly paved; there is, consequently, no surface drainage, and foul water had collected in the hollows in considerable quantities.

The courts and houses are filthy, the privies offensive, and the whole atmosphere unwholesome. There is a court out of St. Ann-street, called John's-buildings, in which there are fifteen houses. There is no drainage; the surface consists entirely of earth, except a narrow strip of flagging up the centre, and, with the houses, is always damp. There is only one open privy for all the houses; it was in an abominable condition. There are two water pipes, one only of which yields water when the supply is on, and the people collect it in small tubs and buckets. This court is said to be very unhealthy.

Another similar court is called St. Ann's-place. It is badly paved and drained. At one end of it there is a large accumulation of filth close to an open privy. Several of the inhabitants complained of its condition. This court also is very unhealthy.

I shall cite only one other example of this class of courts. It is a place called Laundry-yard, out of Great Peter-street, the houses of which, as I have been informed, belong for the most part to the Gas Company. It is altogether in a bad condition, badly paved, and filthy, and complaints were made of the smells arising from the drains, which were said to be in part occasioned by the refuse from the gas-works. I may mention Upper and Lower Garden streets as examples of epidemic streets in comparatively open neighbourhoods. Of these Lower Garden-street is the worst, and it is at present the seat of a scarlet fever epidemic. The surface of these streets is unpaved, and full of ruts and hollows, with water laying in them. There is no proper drainage, and the houses are consequently damp. I went into the back yards of several of the houses: they were filthy, badly paved, and had open offensive privies, with the water-butts standing close to them. It was stated to me by an inhabitant in Upper Garden-street that the privy drains were in a number of instances carried underneath the houses, and that they required to be opened occasionally for cleansing.

In all the localities I have visited, with very few exceptions, the water supply appeared to be abundant as to quantity, but its manner of distribution is very defective. The supply is intermittent and is received into cisterns, open wells, or underground tanks, from which latter it is raised for use by pumps. These tanks are usually placed in suspicious proximity to the court drains, and where there are cesspools, the water may from a very trifling accident become polluted. In one or two instances, the only means of supply was from a pipe, and the people had to collect the water in any vessels they might happen to possess.

The most decided sanitary improvements which I have witnessed in the epidemic districts are those connected with the flagging of the courts. This has been carried out to a considerable extent, and with the most marked beneficial results as to surface drainage and cleansing, as well as in the condition of the houses. In the majority of instances the flagging has been very well executed, the water runs off completely, and I do not remember to have observed a single case in which any refuse had been deposited on the surface.

The good effects resulting from this improvement are perhaps even more marked than in St. Olave's Union; for, in addition to the improvement in the houses and people, I saw instances in which even the external walls of the houses had been cleansed and coloured, so as to make them more in keeping with the improved character of the surface.

Several striking illustrations of this might be mentioned. There are, for example, three courts situated next to each other, called New-square, Cottage-court, and Union-place; all three were formerly unpaved and filthy, and the houses and people partook of the same character. New-square and Union-place are now paved. When I visited them they were quite clean, and the houses presented a marked contrast to those of the district generally. Cottage-court, on the other hand, remains in its original state. The surface is unflagged, it was filthy and covered with patches of refuse, while the houses and their inhabitants might have belonged to a totally different region of the metropolis to those of the courts on either side.

The importance of flagging courts as regards the health of children, who spend so much of

their time in them, can hardly be over-rated. The poisonous exhalations from filthy, humid, and unpaved surfaces are powerful predisposing causes of disease in infantile constitutions.

I was very glad to find that improvements in house drainage have been carried out in a few localities. In these the open privies and cesspools, with brick drains, have been removed and replaced by pipe-drains and pan-closets. In the majority of instances, however, no water supply has been laid on to the closet, affording another illustration of the want of that combination of water supply with house drainage, so strongly advised in the Sanitary Report of 1842; and in the reports of the Health of Towns Commissioners, as well as continually insisted on by your Honourable Board, and, as might have been expected, the success in some cases has been, in consequence, only partial. I found examples of improvements in various stages of progress. In some cases, the only means of keeping the drainage clear is by throwing water down the pan, and the people stated that the closets acted quite well by taking this precaution. In other instances, the overflow from the butts is allowed to pass into the pan, but in these cases also water has to be thrown down.

The improvement in the sanitary condition of courts, the surface of which has been properly flagged, and where the improved drainage has been at the same time introduced, is very striking.

Oliver's-court, Bowling-street, is an illustration of this. It is well flagged, and about twelve months ago it was supplied with pan-closets instead of open privies. A person who had lived in the neighbourhood fifteen years spoke very strongly as to the bad and offensive condition of the court before the change. She stated that the smell in the houses used to be dreadful, and the people sickly, while now there is no smell whatever, and the health of the court has manifestly improved. The people in the house certainly looked far more healthy than those in unimproved localities.

I was glad to find that the improvements in this court had become known to the people at some distance, and had given rise to strongly-expressed wishes that the same advantages might be extended to them also.

There is one well known epidemic locality, called Champion's-alley, which has undergone a more thorough sanitary improvement by the enterprise of a private individual than any other similar spot in the metropolis, at least so far as I have hitherto observed. This court was formerly unflagged, and consisted of miserable filthy houses with cesspools, and all the other concomitant abominations, which have been removed and replaced by pan water-closets. It used to be a perfect hot-bed of zymotic disease, and always yielded a large number of scarlet fever cases.

Messrs. Pink, the builders, give the following account of the improvements they carried out in Champion's-alley, in a communication I have received from them on the subject. "The houses are now substantially rebuilt on both sides of the court. The public passage-way is newly paved, as are also the whole of the back yards of the houses. The new water-closets have answered very well, no stoppage having occurred, to our knowledge, but once, and that through some person having thrown down rags and pieces of wood. The premises are drained into the common sewer in Market-street, commencing with a nine-inch pipe drain two-thirds down the court, six-inch branch drains thence to the water-closets, and four-inch pipe drains from the six-inch drain to all the rain-water pipes, sinks, cisterns, &c., with proper bends and junctions carefully executed, so as to offer no impediment to the free discharge of their contents into the sewer, all cesspools having been previously filled up. The water-closets are supplied from large slate cisterns, their size ensuring a constant supply. These cisterns form the roofs and ceilings of the several water-closets.

"The present occupants are clean in person, and seem desirous of maintaining their present cleanly condition, decidedly different in these respects to the former inhabitants previous to the alteration. The rents of the houses, as compared with the same class of dwellings unimproved, are about one-third more, and the houses are, notwithstanding, in much request.

"The water for the domestic purposes is Thames water, and supplied from the same large cisterns which serve the water-closets. It is in each case conveyed into the back kitchen by a leaden pipe with a tap over a sink. The health of the court, compared with what it it was before the improvements, is decidedly amended.

"The improvements in this court have led to the efficient drainage of several other premises executed by us in the same locality, and by the

substitution in several instances of the patent water-closet. The works were finished and occupied in 1850."

There are five houses in the court, and the cost of the drainage was about 37*l.*

The houses now look as if they belonged to a superior class from those usually inhabited by the labouring population, and the court is healthy. The locality is the same; its sanitary condition alone is altered, and the external results are highly satisfactory when contrasted with the wretched condition of other places in the immediate vicinity. Those persons who have seen with their own eyes the miserable and unwholesome state of the great majority of the dwellings of the labouring classes, can alone understand the feelings of satisfaction to which such improvements give rise.

I may here mention, as an illustration of the opposite modes in which sanitary works are often executed, that, while inspecting Vine-street, I found one instance in which a pan-closet had been constructed without any water being laid on. The people had neglected to throw water down, and the drains being blocked up were a serious cause of nuisance. Separated from the closet by a thin brick wall, there was another belonging to the next house to which water was properly laid on. The arrangements in this case were stated to act quite satisfactorily.

A striking example of the beneficial results of combined sanitary works of drainage and water supply is afforded by the improvements which have been effected in the Cloisters and Precinct of Westminster Abbey. It appears from the Third Report of the Metropolitan Sanitary Commissioners, that in the month of April 1848 a severe attack of fever took place amongst the scholars and residents. 14 of the boys were attacked and 2 died. Among the other inhabitants, including servants, there were 22 attacked and 1 died of fever, making in all 36 attacks and 3 deaths.

It appears from the evidence laid before the Metropolitan Sanitary Commission, that the fever was of the type usually observed to arise from local causes, and that cases of a similar character had occurred within the Precinct during a number of previous years.

On two separate occasions, immediately before the outbreak of the fever of 1848, a strong stench was experienced in the school. The first was thus described by Mr. Rigaud: "There was a violent stench in the school in the second week in March,—a remarkable stench, so strong that it affected myself in merely passing through it in going up to the schoolroom; it was more by the school door than in the school. I was obliged to leave the school one morning for a few minutes, being very much inclined to vomit. There is a vestibule through which we enter into the school; there the stench was the strongest, but it penetrated about half way up the school itself. Every boy must necessarily have passed through that region of stench in getting to his place. It affected Mr. Weare in a very similar manner to what it did myself, producing a strong metallic taste in his mouth."

The second occurred about the 12th of April. Mr. Weare, whose illness seems to have commenced about this time, thus speaks regarding it: "My own impression is that the smell occurred about a week or nine days before Good Friday, but I cannot speak positively. Several of the boys in the school also think that it occurred about a week or fortnight before Easter. One boy is positive that the same smell of dead rats occurred on two occasions; the last and most offensive, he thinks, about eight or ten days before Easter; the first and less powerful smell, though of the same kind, several weeks before Easter. It seemed to me as if some rats had congregated together, and had died in great numbers under the floor of the school near the door. In consequence, I sent to the clerk of the works to request that the floor should be taken up, and search made for the cause of the smell. The school was free from smell at eight o'clock on the morning when the stench occurred; at ten o'clock we all perceived the smell, and it prevailed, I think, all that day and a portion of the next."

It appears also that disagreeable smells were perceived in other places besides the school. Mr. White Cooper, the surgeon, who attended the family of the Dean of Westminster, says: "The family had been complaining of an unpleasant smell, as I ascertained, for some days previous to the attack. They stated that there had been a very unpleasant smell in the house, and certainly I can bear testimony to it myself as being a peculiarly disagreeable odour."

Mr. Lovick made a house-to-house inquiry among the residents, and received from them answers to the following effect: "Occasionally we have very offensive smells." "Sometimes very dreadful." "More than ordinary at changes of the weather." "Mostly after rain

and of a dull dark day, or after very wet or very dry weather, and generally at every change of the weather."

The circumstances attending this outbreak of fever led to a minute examination of the sewers and drains running under the cloisters, the precise condition of which no one at the time appears to have been at all aware of. The locality where the fever had occurred presented in a more intense degree that class of destructive evils arising from erroneous works of drainage, which usually constitute so serious a cause of epidemic disease in many parts of the metropolis. The subsoil was honeycombed with cesspools, and tunneled underneath by enormous cavernous sewers of irregular forms and dimensions, having no regard to the volume of fluid they were intended to carry away; and, like so many similar works in the metropolis, they had become extended cesspools, filled to a depth of several feet with the putrescent deposit of ages. The odours in the houses were distinctly traced to these enormous sewers, the evaporating surface of which was estimated by Mr. Lovick at about 2,000 square feet.

In attempting to enter the sewers, it is stated that the workmen, "after several attempts to examine the sewer, were unable to proceed with the investigation;" that "the soil rose to the top of their long water-boots;" that "the contents of the sewer could not possibly flow into the public sewer;" that "they were obliged to get back, otherwise they would have got into the deep;" that "beyond a certain part the sewer was so foul that he could not get in at all;" and that the stench was so frightful "that a person who was not used to it could not have gone into it at all."

It appears that the foul air escaping into the cloisters and precinct, from the various apertures connected with these sewers, could not have been less than 54,000 cubic feet per hour, a quantity stated to have been sufficient to have filled the schoolroom in three hours, the houses in sixteen hours, and the Abbey itself in about ninety-three hours.

The Commissioners arrived at the following conclusions as to the remedies required: "We recommend that the whole of the branch as well as the main drainage under and about the school, and in the cloisters, be immediately taken up, and a system of tubular drainage, with adequate and regulated supplies of water, substituted; that the cesspools and privies be removed, and the watercloset apparatus laid down in their stead; and that, by means of efficient traps, all communication with the adjoining sewers be prevented as far as may be practicable."

In conformity with this recommendation a plan for combined works of water supply and tubular drainage was drawn up and executed in October 1848.

I called at the school, and saw Mr. Liddle, the head master, and Mr. Ryde, clerk of the works, who stated that the new drainage had answered perfectly well. Mr. Ryde informed me that there had been only one stoppage, which had been occasioned by the sinking of the bed on which the pipes were laid, under one of the joints, and from the workmen having neglected to remove the ring of cement inside the joint. The defect was speedily remedied, and since that time there has been no further obstruction.

At first, part of the drains used to be flushed, but for the last two years Mr. Ryde stated that this operation had not been performed, and that the usual waterflow had been found sufficient to keep them clear of deposit.

Before the change in the system of drainage, Mr. Ryde said that there were "constant smells all over the place," but that there had been none since, and that the locality escaped without any illness during the last Cholera, while the disease was ravaging the neighbourhood.

Mr. Liddle informed me that the drainage arrangements in his own house acted satisfactorily and without smell, and that the school has been healthy since the execution of the improvements, there having been no recurrence of fever cases amongst the scholars.

I have likewise communicated with Dr. Fincham, the medical attendant, who states that "cases of measles, chicken-pox, mumps, and hooping-cough, have occurred from time to time, but that there have been no cases either of scarlet or continued fever, and none of small-pox."

It would thus appear, that while those severer forms of zymotic disease, connected with intense local causes, have disappeared since the execution of the sanitary works underneath and within the dwellings which were specially intended for the removal of those local causes; the general influence of the unimproved neighbourhood has continued to manifest itself in the occasional occurrence of the milder forms of infantile diseases.

This case is very similar to that of Lambeth-

square, the details of which are given in my Report on the Epidemic Districts of Lambeth Parish. In each there was a defective construction of drainage works, attended in both instances with the disengagement of volatile poisons from putrescent deposit, which the works, in neither case, could carry away. In both cases the persons exposed to the influence of these emanations first acquired the susceptibility, and finally became the subjects of epidemic disease. In both instances the cause was distinctly traced to the works, which were destroyed, and replaced by tubular drainage, combined with water, and the result to health has been in each case the removal of the susceptibility of the inhabitants. It is deeply to be regretted that as yet the metropolis furnishes so few similar examples of improved works, and that so large a number of illustrations still exist in which drainage works increase instead of diminishing the localizing causes of epidemic disease.

From what I have already stated it will be perceived that, notwithstanding the improvements which have been effected in certain localities, the sanitary condition of the epidemic districts generally has not been materially altered. The drainage, over a large portion of the area of the parishes, is, so far as I have been able to ascertain, very much in the same condition as formerly. The subsoil and the houses are consequently still damp; the unwholesome exhalations from open privies, cesspools, and drains remain pretty much the same. It has been stated to me that the flooding of cellar dwellings still occasionally takes place, while the very existence of such dwellings is in itself a prominent cause of disease. The houses and poorer localities are still as crowded as formerly, and the habits of the population generally are not materially improved. The surface drainage and cleansing, in many back courts and other close and ill-ventilated places, requires much improvement, and a considerable proportion of the houses are in a very filthy condition, while house drainage has been carried out in comparatively few instances.

It is evident that any real improvement must begin with the permanent works of water supply and sewerage in the parishes. There are other measures, however, which could be at once adopted with great advantage.

The beneficial results which have been obtained from flagging the courts are sufficiently striking to demonstrate the advantage of this sanitary improvement, while the extent to which it has been already carried out proves its entire applicability to the circumstances of all the epidemic localities.

The chief preventive measures of a temporary character are of course those connected with cleansing. I am of opinion that the improvements which have taken place in this respect ought to be extended still further. It is not enough for the protection of the public health to wait till an overflowing privy or a heap of refuse is complained of as a nuisance before it is removed. A thorough and continuous inspection should be made by competent officers of all the epidemic streets and courts. These are well known to the parochial medical officers, and the names of many of them have been already enumerated. It is of the utmost importance that every cause of atmospheric impurity should be abated without delay, that pigs and other nuisances should be removed, and all accumulations of putrescent matters prevented. The out-of-the-way places where these are apt to be overlooked are those in which the population is most crowded and where epidemic disease usually commences.

The cleansing and limewashing of houses, which are valuable and easily applied auxiliaries in the prevention of zymotic disease, should be extensively put in practice. Ample experience during the Cholera of 1849 has proved the efficacy of these measures; and even at the present time, while scarlet and continued fevers are so prevalent, I have no doubt that in many instances it would arrest the progress of these diseases. Indeed, the existing condition of the parishes as to these two epidemics calls for active exertions in pressing forward measures of cleansing.

Whatever is done against Cholera will be immediately advantageous against all febrile diseases; and this is one of the strongest arguments which can be used for carrying out the recommendations in this Report.

I have the honour to be,

My Lords and Gentlemen,

Your obedient Servant,

Whitehall,
October 28th, 1852.

JOHN SUTHERLAND.

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Official Circular

OF PUBLIC DOCUMENTS AND INFORMATION:

DIRECTED BY

THE GENERAL BOARD OF HEALTH

To be printed chiefly for the use of Officers of Health, Medical Officers, Members of Local Boards, and others charged with the execution of the provisions and regulations issued under the authority of the Public Health Act, 1848, and the Nuisances Removal Acts, 1848–49.

No. 8. Circular issued December 15. 1852.

General Board of Health, Whitehall, Dec. 1852.

The General Board of Health, on a review of their proceedings, have directed that the documents on the following subjects should be printed and circulated for the information of Officers of Health, Medical Officers, and Members of Local Boards; viz.

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I. Notification with respect to the Powers and Duties created under the Public Health and Nuisances Removal and Diseases Prevention Acts; and the Measures taken by the General Board in execution of the latter Acts, during the Outbreak of Epidemic Cholera in 1848–9, and their effect - - - - - - - - - 1

II. Extract from a Report on the Progress and Character of the Epidemic Cholera, prevailing in Germany in 1852. By R. D. Grainger, Esq., Medical Superintending Inspector - - - - - - - - 8

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IV. Extract from Dr. Sutherland's Report on Westminster, showing the results of efficient Drainage in the Cloisters and Precincts of Westminster Abbey - - - - - 11

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VI. Extract from Dr. Sutherland's Report on Westminster, illustrating the change effected by Sanitary Improvements in an Epidemic Locality called Champion's Alley - - - - - - - - 14

VII. General Powers under the Nuisances Removal and Diseases Prevention Acts 15

I. Notification for the Information of Local Boards of Health and Local Authorities with respect to the Powers and Duties created under the Public Health Act and the Nuisances Removal and Diseases Prevention Acts, and the Measures taken by the General Board in Execution of the latter Acts, during the Outbreak of Epidemic Cholera in 1848-49, and their Effect.

The General Board of Health from the evidence on which the Public Health Act was founded, and to which extensive circulation has been given, have always been of opinion that ordinary endemic, epidemic, and contagious diseases, dependent on known, constantly present, and removable causes, demand as great attention as extraordinary epidemics; ordinary epidemics, indeed, occasioning the greater loss of life, while measures of relief undertaken hastily, under the influence of alarm and terror, though they may be costly, are seldom successful.

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Nevertheless, at a time when significant warnings render the return, at no distant period, of such a disease as epidemic cholera not improbable, the General Board would urge on Local Authorities the duty of putting in force the powers with which they are charged under the above Acts, with increased vigilance; and it is with satisfaction that the General Board have observed the great and growing anxiety of Local Authorities in provincial towns to do this.

The General Board deem it right to communicate, for the information of Local Boards, the evidence they have received from their medical inspector, who has visited the seats of the pestilence, and from the official report of the government of Poland, transmitted through Her Majesty's Consul; both concurring to prove that the virulence of the disease, during its recent outbreak, has greatly exceeded that of any former visitation. It is true that the progress of the pestilence towards this country, on which it was steadily advancing precisely in its former track, has been checked with the decline of the heat of summer; but it will be seen that the authorities of Berlin and Hamburgh regard it as suspended only, and not extinguished; and fully expect its re-appearance in an epidemic form in both these cities on the return of spring, as it re-appeared in Russia in the spring of 1848, after having experienced a similar check by the cold of the preceding winter, though experience shows that the intensest cold does not always arrest its progress. *

But, whether the calamity of another widespread cholera epidemic be impending or not, it is the part of prudence and duty to employ the present interval of comparative safety in the application of all available measures of prevention as if the threatened danger were certain to be realized. And since the measures of prevention available against any extraordinary epidemic, are precisely those which are the most efficacious against ordinary epidemics, the General Board feel that they would not acquit themselves of their responsibility if they omitted to call special attention to such measures, on any threatening or probable contingency, though remote, of the re-appearance of a pestilence which, on it last visitation, numbered, in this country, up wards of 70,000 victims, and which is declare by those who have witnessed it, to have as sumed, wherever it has recently re-appeared, more malignant and fatal form than heretofore

Moreover, the accident of the present seasor so likely to occasion excessive mortality i many parts of the country, is peculiarly cal culated to increase the intensity of any extra ordinary epidemic influence that may unfor tunately concur with it. By the late heav rains many low-lying and badly drained dis tricts have been inundated; sewers of depos have burst; privies and cesspools have over flowed; and their contents, suspended in larg quantities of water, have been carried into th cellars and basement stories of dwellings. Th General Board have received communicatior from various parts of the country forcibly de picting the deplorable state of the inhabitant of such houses, arising both from their excessiv dampness and the mass of poisonous matte which has become mixed with flood wate At Southsea (Portsmouth), for example, th inhabitants in some instances have been unabl to get out of their doors without bricks bein placed on each other as footsteps; while th soil from the privies has been carried by th water into the houses above the floors, creatin an intolerable stench. In Cardiff, waters sat rated with cesspool matter have risen up i various localities through the ground, spreadin the most poisonous effluvia, and declaring the delcterious power by the almost simultaneou occurrence of fever, not only among the poo but in families inhabiting houses in some the best streets in the town. Into some of th cellar-dwellings at Leeds, polluted water h risen upwards of a foot in height; and in on of these wretched abodes, examined by th medical inspector of the General Board, nin inmates, unable to find shelter elsewhere, ha remained during the whole of the preceding night; the water, on subsiding, having left deposit of black mud some inches thick.

Wherever floodings of this kind have take place (and the instances recited are but ex amples of similar occurrences in various par of the country), pestilential gases must con tinue to be evolved from the whole of the su face thus saturated with noxious matter as lon as the process of evaporation goes on, that as long as any dampness remains; the con

* Since this Notification was in type, the General Board have received official communications, through Her Majesty's Minister at St. Petersburgh, stating that cholera had recently broken out in that city; that up to the date of the 16th Nov. there had been 583 attacks, and that of this number only 78 had recovered, while the deaths amounted to 238 -- facts affording melancholy corroboration of the malignity of the epidemic, and of its tendency to spread and to return to its former seats.

nuance of that dampness being greatly pro-
acted in consequence of the extremely porous
d absorbent nature of the bricks of which
e houses of the poor are generally constructed.
The General Board are aware that it must be
very anxious consideration to Local Autho-
ties how the consequences of this state of
ings can be counteracted or mitigated. Of
urse they will not fail to adopt without delay
ery means available in each particular locality
r carrying off the water as rapidly as prac-
cable. But the General Board would represent
at a calamity so urgent, unforeseen, and un-
oidable affords a special occasion for admi-
stering extraordinary assistance to the poor,
enable them to keep large fires in their
oms, to protect themselves from cold and
amp by warm clothing, to sustain their strength
y a solid and nutritive diet, and to counteract
e predisposition to disease induced under
ese peculiar circumstances, by suitable tonics
nd other remedies under medical direction.
uch helps would be required in ordinary
asons under like circumstances; but they are
eculiarly necessary at a time when there is a
reatening of the return of the most formidable
pidemic of modern times, and when the con-
tions in question are among the most powerful
uses predisposing to the localisation and spread
f the pestilence.

With reference to the measures of preven-
on proved to be the most effectual against this
estilence, the General Board would remind
ocal Authorities, of the two great results of
he experience of this epidemic in this country;
amely, first, that wherever it prevailed, its
rincipal, nay, its almost exclusive seats and
ubjects were the seats and subjects of ordinary
pidemics; and secondly, that wherever the com-
on localizing conditions of ordinary epidemics
ad been removed by sanitary improvements,
o that typhus and other zymotics had either
eased altogether or recurred but rarely, there
pidemic cholera was unable to establish a foot-
g, and often even to number a single victim.

From inquiries recently made by the General
oard into the present condition of the former
eats of this pestilence, it appears that many of
he localities in which, on its last visitation, it
aged with the greatest severity, have been so
uch improved by better drainage, by better
rrangements for the rapid and complete re-
oval of refuse, by surface paving and flagging,
nd by the introduction of a more abundant sup-

ply of purer water, that the ordinary epidemics by which they were previously devastated have been diminished in a remarkable degree. From the reports of the medical inspector of the Board (from which extracts will be given hereafter) who has recently made a special examination of the principal cholera and fever localities in the metropolis, it will be seen that material improvements have been effected in several places which had obtained an unhappy notoriety for their filthy condition, and their excessive sickness and mortality. Inquiry into the condition of similar localities in other cities and towns, as those of Leeds, Hull, Gainsbro', Newcastle, Gateshead, Tynemouth, &c., has afforded satisfactory evidence that in numerous instances the Local Authorities have successfully exerted themselves in the abatement of nuisances, and the supply of the more urgent necessities of some of the worst places under their jurisdiction. In all these cases it has been proved that the diminution of zymotic disease has been proportionate to the extent of these improvements; and that in the instances in which such improvements have been tolerably complete, there has been almost an absence of this class of diseases. Experience, therefore, warrants the conclusion, that, in as far as these improved localities have become exempt from ordinary epidemics, they will resist the invasion of any extraordinary epidemic by which they may be attacked, and that, consequently, were Asiatic Cholera to revisit these, its former seats, it would be unable again to establish itself in them, since the conditions which formerly favoured its localization have ceased to exist, and the epidemics which then preceded and prepared the way for it have been nearly banished.

But the improvements which have been effected in the particular localities examined might be effected generally; and special authorities and powers are created for this express purpose by the above-recited Acts.

Thus, in places where the Public Health Act is not in force, the Nuisances Removal and Diseases Prevention Acts invest highly important though limited powers in Town Councils, or, where there are no Town Councils, in Improvement Commissioners; and, failing these, in Commissioners of Sewers and Boards of Guardians, for the general purposes of cleansing and the removal of nuisances.

A recital of these powers which are permanent, everywhere in force, and of an eminently

avoid occasions for dispute if the boxes belonged to private individuals: besides, they canbe supplied more cheaply in large numbers than singly.

Whatever provision may be made for the rapid removal of all kinds of refuse from private dwellings, should be extended to stables, mews, slaughter-houses, and markets. The constant outbreak and spread of every form of zymotic disease in these places prove that, as commonly kept, they truly deserve the name they have acquired of "fever-nests," especially in crowded localities.

Instances are recited (see Nos. III. IV. and V.) illustrative of the beneficial results which have followed from the introduction, under varied circumstances, of sanitary improvements. These results are most encouraging; yet they have been obtained for the most part from single improvements, or at least from improvements on a very limited and imperfect scale, and even those after they have been in operation only a short time. There are towns, however, in which works are in progress that combine the several conditions of completeness, as far as such conditions are yet known. It is satisfactory to find that every successive step of improvement in the construction and execution of such works has led to increasing efficiency with diminished cost. From the experience already obtained, Local Boards may confidently expect to be able to execute complete works of drainage and water supply, not only without increasing existing parochial burthens, but with the positive reduction of them. Full details of the ground on which this statement is made will be given hereafter. In the meantime, from the experience of some towns, in which the construction of combined works is approaching to completion, it appears, with reference to cottages, that the cost for *private* works of drainage and water supply is little more than one penny per week, and for *public* works another penny; and with reference to higher-class houses, that the cost for such works is little more than threepence per week. These works include the abolition of the cesspool and privy; the substitution of the water-closet, sink, and the whole of the apparatus necessary for the immediate and complete removal of refuse matter from dwelling houses; the disuse of the cistern and pump, and the consequent saving of the plumbers' and other expenses incident thereto; and, as the final result, the suppression or material diminution of typhus, scarlet fever, diarrhœa, and other most expensive diseases of this class. Since earnest attention has been paid to this subject, the general result is, that by improvements already effected under the Public Health Act, the districts at least may be efficiently drained at expense heretofore incurred for one; and towns may be supplied with an unlimited quantity of pure water, carried into every house, an expense heretofore incurred for the intermittent and inadequate supply of one town.

The General Board would call special attention to the result of sanitary improvement exemplified in the experience of the Metropolit Buildings (see No. V. p. 13.); a result far great than could be anticipated or credited by any o not practically acquainted with the subject, who had not made it a special study. If the mo tality in the whole of the Metropolis had, duri the year 1851, been in the same proportion as the Metropolitan Buildings, the deaths, instead being 55,354, would have been only 29,485; th is, 25,000 lives would have been saved. The to deaths in England and Wales for the same ye were 395,933. Had the mortality been in t same proportion as in the Metropolitan Building the deaths would have been only 215,073; that there would have been a reduction for all En land and Wales of 179,860 deaths.

The General Board would urge the importan of the immediate appointment of an Officer Health, who would greatly strengthen the han of the Local Board, and relieve them from mu labour and responsibility; while it is precise at a period like the present, before any extr ordinary disease has actually broken out al spread, that the services both of the Officer f Health and the Inspector of Nuisances would b eminently useful.

Much additional benefit would be derived f the appointment of Committees of Local Boar composed of members of their own body, w should take upon themselves the duty of perio visitation of the localities and houses most r quiring attention, and of reporting from time time the result of their inspections. Such pe sonal examinations would inform members in t only satisfactory manner of the actual conditi of the places under their charge; make them a quainted, from their own observation, with t exact spots where public works are the m urgently needed; suggest to them the measu of alleviation that might in the mean time b most usefully introduced; enable them, by thr own knowledge, to sustain the reports of thr officers against the misrepresentations and denia

ignorant and interested parties; and give em an influence over the poorer classes, whom ey would thus have opportunities of instruct- g and counselling, the beneficial result of hich would be immediate, but which would xtend beyond the moment of apprehended anger. One Local Board has set an example this respect, which is worthy of general imita- on. The Barnard Castle Local Board, in iving an account of the progress of their works, us report:—"About a fortnight ago the ocal Board determined to divide the town into istricts, for a house-to-house inquiry. A dis- ict was allotted to every five members; and, as result of this inquiry, notices to execute rainage works and erect water-closets, instead f the existing privies, have been given in about inety cases. The inquiry tended to convince he Local Board more than ever of the necessity f the public works just executed; and that the orks were only the beginning and foundation f what they had undertaken."

In Leeds, also Committees of Members of the own Council, and of the inhabitants, have been ecently formed in each ward, who have insti- uted a similar visitation from house to house, nd with the best results.

With respect to internal cleansing, the General oard would call the attention of Local Boards o the primary rule of the Bye-Laws ordained or the regulation of cleansing, namely,—"That ll occupiers of premises within the district shall o keep them cleansed that no noxious or ffensive smells shall proceed from the same, so s to cause annoyance to neighbours or passers- y." All premises in this condition, and espe- ially all such premises in which any form of ever has actually broken out, whether a private lwelling-house, a common lodging-house, or a workshop in which a number of workpeople are ssembled, should be specially and frequently nspected. To these and all similar places the urifying process of lime-washing should be at nce applied under the direction of the Officer f Health. The representation made by the General Board in their Second Notification, as o the efficacy of this process, founded on its effect in checking the spread of fever, has been mply confirmed by its efficacy in averting the utbreak and arresting the progress of epidemic holera. In Edinburgh, Glasgow, Bristol, and ther populous towns and cities, the most de- isive testimony has been borne to its beneficial effect, obtained at exceedingly moderate cost.

In every town visited by the medical inspector, special and repeated complaints have been made of the state of the stables and slaughter-houses, and especially of the nuisance occasioned by the latter. Ample powers are given to Local Boards for the regulation of these places, which it is incumbent on them to exercise.

To the condition of common lodging-houses, the ever active foci of moral as well as physical pestilence, Local Boards will, of course, direct more special attention than heretofore, and enforce strict compliance with the Act of last session. In the towns visited by the medical inspector, the most urgent representations have been made by Boards of Guardians and other authorities on the enormous amount of disease and expense caused by these places. The Act for their regulation (14 & 15 Vic. c. 28.) is now everywhere in force, and the authorities appointed for its execution are, in London, the Commissioners of Metropolitan Police; in places where the Public Health Act is applied, Local Boards; in corporate towns, Town Councils; under local acts, Improvement Commissioners; and failing these, Justices of Peace in Petty Sessions. The framers of the Act have intentionally omitted any definition of the term "a common lodging-house," in order to leave a large discretion to Local Authorities for deciding, on a consideration of the circumstances, when a house in which persons are crowded together in a manner alike incompatible with health and decency may be properly regarded as coming under the Act, whether the inmates are lodged for shorter or longer terms, from a single night to a month. The law officers of the Crown have interpreted the term "common lodging-house" to signify—"That class of lodging-houses in which persons of the poorer class are received for short periods, and who, although strangers to one another, are allowed to inhabit one common room." It has been ruled further, that the term "room" includes rooms in public-houses in which persons are lodged as above, and such rooms have been put under regulation accordingly.

Much progress has already been made in the general enforcement of this Act in the metropolis under the Metropolitan Police, and with such effect that in the lodging-houses, under regulation, comparative cleanliness, order, and decency have begun to take the place of filth, disorder, and gross immorality. For the information and guidance of Local Boards and

other Local Authorities, the form of notice for registration and the general regulations issued by the Commissioners of Metropolitan Police will be given in the following Circular.

The General Board would further represent that all practical precautions and regulations should be adopted with regard to overcrowded burial-grounds, and that the attention of the clergy, the churchwardens and others should be directed to the importance of the ventilation of vaults underneath places of worship, of churches themselves, of schools, and of all places in which large numbers of people are accustomed to assemble.

But when Local Boards have put in force, with the utmost care and diligence, all the powers with which they are invested, they cannot hope to obtain immediately, and in all places, exemption from the visitation of epidemic diseases. These terrible maladies are the stern monitors of our duties with respect to laws, obedience to which our Creator has ordained as the condition of health and life. The consequences of such neglect of those laws as has hitherto been habitual and general, cannot be counteracted at once. The present generation is called upon to rectify the accumulated evils of past ages of neglect and ignorance. This is a task which requires thought, skill, and time. The most extensive sanitary improvements that can at present be introduced into our towns and cities will rarely be coextensive with obvious sanitary defects and evils. Much has still to be learnt in the perfecting of sanitary works; while formidable obstacles impede, and will for a time continue to impede, the general adoption of what is sufficiently known. Nevertheless, as long as any town, or any street, lane, court, or house in any town is subject to the recurrence of zymotic disease in any form, none can foresee the extent to which all such localities may suffer during the prevalence of an extraordinary epidemic influence. Not only for the occasional return of ordinary epidemics, but also for the occasional outbreak of extraordinary epidemics, Local Boards must therefore be prepared. And should the pestilence which in other countries has recently committed such cruel ravages, and which is thought to be at present slumbering only, again revisit our country, it will be the imperative duty of Local Boards, and other authorities, to make themselves acquainted with, and to carry into prompt operation the measures which experience has shown to be effectual in cutting short its course. Happily we have arrived at the knowledge of such measures; they are definite they have been tried; they have been proved to admit of ready application; they are comparatively inexpensive, and they have been attended with success. It may be useful again to present a summary of these measures, as embodied in the Regulations and Directions of the General Board, during the prevalence of the epidemic o 1848–49, and their effect.

II. Extracts from Report (Dated September 28th, 1852,) on the Progress and Character of the Epidemic Cholera prevailing in Germany in 1852. By R. D Grainger, Esq., Medical Superintending Inspector of the General Board of Health.

All the evidence I have received proves that the present epidemic, so far as it has yet extended, i one of the most destructive outbreaks that has ye occurred in Europe, both as regards the number of persons attacked and the proportion of deaths

In Col. Du Plat's (Her Majesty's Consul General for Poland) despatch, dated September 3, 1852, it is stated, that up to that date, there had occurred in the city of Warsaw, with a population of about 170,000 souls, 10,406 attacks and 4,748 deaths; thus showing that 1 person in 1 had been attacked among the inhabitants, and that 1 in 30 had died. The intensity of the disease is shown further, by the fact that on one day, namely August 13th, the attacks amounted to 561 and the deaths to 244.

In the epidemic of 1848–49, the most severe that has yet occurred in England, the deaths i the district of London, which suffered most severely (Rotherhithe), were in the proportion of 29 to every 1,000 inhabitants, or rather less than 3 per cent., the average mortality of the whole metropolis being ·66 per cent., or 1 in 15

The epidemic has by no means been confined to the poor and destitute, many of the higher and middle classes having fallen victims. It has observed its old track, having broken out in several of the chief towns of Persia before attacking Europe. It is widely spread, and presents a great front of about 400 English miles in extent, towards Berlin and Hamburgh, the cities by which the cholera in former years has approached England.

The disease has in all the places hitherto attacked been, as usual, preceded before the outbreak by an unusual amount of diarrhœa, gastric

ver, and the intermittent fever which prevails much in Northern Germany, owing to the st extent of marshy land. As a rule, each dividual attack has been preceded by pre-onitory diarrhœa. Upon this important point all e physicians whom I have seen are unanimous. The attack, when it has reached collapse, is as tal and uncontrollable as ever. Treatment, how-er varied (and many plans have been tried), is no avail whatever. It matters not what me-cines are used; fifty, sixty, or seventy per cent. those attacked, according to the intensity of e epidemic, perish: the disease can be checked preventive treatment in the outset, but hither-no cure has been discovered for collapse.

All the inquiries I have instituted show the preme importance of predisposing causes in veloping the disease. In the present, as in her epidemics, the intensity of the attack and e mortality have been in the exact ratio of ese causes; which are fundamentally those of a nitary character—filth, in all its forms, ex-ssive moisture, and overcrowding; upon this oint I have received precise medical evidence, l the statements being in complete accordance ith the observations made in Great Britain.

With reference to the probability of the idemic reaching England, one of the most reatening circumstances is its great severity nd extensive diffusion.

It is not like one of those slighter attacks hich have occurred in some parts of Germany nd in England, as in 1834 in both countries, nd in 1850 in certain districts in Germany; it only comparable with the great epidemics of 831-32, and 1848-49.

The disease is for the present established in erlin, though in a mild form; and as Ham-urgh, in every epidemic that has occurred at erlin, has invariably been attacked soon after-ards, the state of things in this latter city is, the existing crisis, very important.

Although the slow development of the present ttack is a favourable circumstance, no great eliance can be placed on this point; and the reat spread and severity of the disease to the ast of Berlin are most threatening.

The season of the year is also to be con-dered, though extensive experience both in ussia and this country shows, that severe cold oes not always check the development of cholera.

The medical practitioners of Berlin were, peaking generally, very apprehensive of an pidemic attack.

From all these reasons there is ground to fear that either at once, or in a short period of time, the disease will become epidemic at Berlin.

As regards Hamburgh, the most important place of all, the cholera always having reached England by that route, no case had occurred up to the time of my second visit, September 22d. At that time also the public health had improved, diarrhœa having much subsided. On the other hand, as Hamburgh has always been attacked as above stated, when Berlin suffered, there can be no reasonable doubt that if the disease becomes epidemic in the latter city, Hamburgh will in turn be affected; and this is the general medical opinion in the place itself.

In reviewing all the facts which have come to my knowledge, and on considering the experience of former years, I have arrived at the following conclusions:—

1. That as far as Poland and Germany are concerned, the present epidemic is one of the most severe and fatal that has yet occurred in Europe.
2. That the disease is daily advancing towards Berlin and Hamburgh along a wide front, Posen, West Prussia, and Silesia.
3. That the disease is, in all essentials, the same as in former epidemics.
4. That in all places in Germany yet attacked, the epidemic has been preceded by an unusual amount of diarrhœa, gastric fever, and intermittent fever.
5. That as the rule, there has been premonitory diarrhœa.
6. That the premonitory diarrhœa is most controllable by proper medical treatment.
7. That in collapse medical treatment is unavailing.
8. That the poor in Germany, as in England, neglect the premonitory diarrhœa; and that, consequently, the cases have, as a rule, been seen first by the medical attendant in approaching or in complete collapse.
9. That there is every ground for expecting that the disease will become epidemic in Berlin, and that it will extend to Hamburgh.
10. That there is great reason to fear that cholera will reach England as a part of the present great epidemic.

III. Effect of Sanitary Improvement on an Epidemic Locality in Lambeth.

In the Report of Dr. Sutherland on the Sani-

tary Condition of the Epidemic Districts of Lambeth, recently inspected with reference to the threatened visitation of Epidemic Cholera, particular attention is directed to one Epidemic locality in which a remarkable improvement has been effected by the execution of suitable works of house drainage and water supply. The spot in question is Lambeth Square, which is described as having been a short time ago "a perfect hot-bed of zymotic disease." In the beginning of the present year the attention of the General Board of Health was called to this locality by a memorial from the owner, representing that the square consisted of forty houses, which for three years past had suffered most severely from typhus fever; that 400*l.* per annum had been spent in repairs, drainage, and cleansing without effect; and that at that time the disease had broken out again.

In compliance with the request of this memorial, a house-to-house inspection was made with a view to ascertain the condition of each house; from which it appeared, that in a population of 434 souls, there had been in one year 80 attacks of zymotic and other diseases=18·4 per cent., or one in every $5\frac{4}{10}$ of the population; and 24 deaths=5·5 per cent., or 1 death in every 18 living; and that all the deaths, with one exception, were under 9 years of age.

Destitution, which is so often and so erroneously adduced as a predominating cause of zymotic disease, and especially of typhus, could not have operated in this case; for the inhabitants belong to the better class of work-people, in the receipt of high wages, chiefly engineers employed by Messrs. Maudsley and Field, and stonemasons engaged on the Houses of Parliament. The square consists of a number of well-built eight-roomed houses at about 26*l.* a year rent: there is a large garden in the centre of the square, which is shut off from the neighbouring street by gates, and is well attended to.

The result of the inquiry was the establishment of evidence to prove that the inhabitants of these houses were poisoned by breathing a pestilential atmosphere, caused by emanations arising from open privies and badly constructed drains.

The houses were drained in the following manner: — Generally to five houses there was one brick flat-bottomed drain, with a curved head passing under the middle house. The drains were untrapped, and an open privy was placed over the mouth of each drain, which had to be opened occasionally when the drain be came obstructed, and the matter found in taken out and removed: sometimes this matt was thrown into the ash-pit or buried in the yar In every house where this arrangement exist the people complained of the odour as somethin quite frightful.

A large proportion of the houses suffered se verely from zymotic disease, but others escape making good the observation, that such dise eases do not invariably attack unhealthy house but that unhealthy houses are always tho attacked.

Some of the houses — as, Nos. 26, 27, 28, an 29 — had neither smell nor disease, and th were supplied with water-closets; and, as if t exception should prove the rule, No. 30 had water-closet, but two children had died of scarl fever. They lived in the kitchen, in front which was an untrapped gulley hole, to whi the medical attendant traced the disease.

It appears that the total cost of this drainag which had caused so large a sacrifice of hum life, had been, including repairs, about 1,25 in 20 years, or about 1*l.* 15*s.* 10¼*d.* per hou per annum, or 8¼*d.* per week. This was t owner's part of the cost. The occupiers their last year of sickness, contributed 80 attacks of typhus fever, scarlet fever, small-p &c., and 24 deaths, which, when reduced money, at the very moderate rate of 15*s.* ease for medical attendance, and 4*l.* for ea funeral, would make 160*l.*

The cost of abolishing this noxious system cesspools, and substituting a complete arran ment of pipe-drains and water-closets for houses, was less than 200*l.*, which sum, if d tributed over a period of 30 years, would ent an expenditure of 7*s.* 7¾*d.* per house per annu about 1¾*d.* per week.

It was stated by the person who attends the estate that the closets are drained w 4-inch pipes; that the back drains are 6 inch and that the mains are 9 inches, in diameter.

The people bore general and earnest te mony to the great improvement in their hea and comfort that has been effected by the n drainage. They state that the drains have ne well; that there has been no stoppage; no s and no disease. The course of typhus and s kindred diseases has been promptly and entir arrested. Up to the present time this exp ment has been attended with complete succe

I witnessed a successful method of drain

ditches in operation near the Clapham-
An open ditch or natural water-course
h ran alongside a garden and past the end
shop and house was a source of great nui-
e to the neighbourhood, and the tenant of
house was always subject to diarrhœa, and
ly died. An 18-inch pipe drain sufficiently
e to carry away the ordinary water flow has
laid in the ditch and covered up, leaving
c above the flood, which happens only a
times a year. This contrivance appears to
ver quite well. When I went along it the
h was dry, and the pipe-drain running about
full. In a sanitary point of view it has also
vered its purpose, for the nuisance has been
lished, and the neighbouring houses are now
paratively healthy. The whole cost of this
rovement was about 7*s.* a yard for drain-
es and works; while the cost of a four-feet
k sewer to carry away a few floods every
r, and to become a cesspool during the in-
vals, as is common in all the instances where
ple covering over is adopted, would have
n from 45*s.* to 50*s.* a yard. (See Minutes
the Drainage of the Sites and Towns.)

EXTRACT FROM DR. SUTHERLAND'S REPORT
N WESTMINSTER, SHOWING THE RESULTS OF
FFICIENT DRAINAGE IN THE CLOISTERS AND
RECINCTS OF WESTMINSTER ABBEY.

TRIKING example of the beneficial results of
ibined sanitary works of drainage and water
ply is afforded by the improvements which
e been effected in the Cloisters and Precinct
Westminster Abbey. It appears from the
ird Report of the Metropolitan Sanitary Com-
sioners, that in the month of April 1848 a
ere attack of fever took place amongst the
olars and residents. 14 of the boys were
acked, and two died. Among the other in-
itants, including servants, there were 22
acked, and one died of fever, making in all
attacks and 3 deaths.

t appears from the evidence laid before the
tropolitan Sanitary Commission, that the
er was of the type usually observed to arise
m local causes, and that cases of a similar
aracter had occurred within the Precinct
ring a number of previous years.

On two separate occasions, immediately before
outbreak of the fever of 1848, a strong
nch was experienced in the school. The first
s thus described by the Rev. S. T. Rigaud,
the second master: "There was a violent stench in the school in the second week in March,—a remarkable stench, so strong that it affected myself in merely passing through it in going up to the schoolroom; it was more by the school door than in the school. I was obliged to leave the school one morning for a few minutes, being very much inclined to vomit. There is a vestibule through which we enter into the school; there the stench was the strongest, but it penetrated about half way up the school itself. Every boy must necessarily have passed through that region of stench in getting to his place. It affected Mr. Weare, the under master, in a very similar manner to what it did myself, producing a strong metallic taste in his mouth."

The second occurred about the 12th of April, Mr. Weare, whose illness seems to have commenced about this time, thus speaks regarding it: "My own impression is that the smell occurred about a week or nine days before Good Friday, but I cannot speak positively. Several of the boys in the school also think that it occurred about a week or fortnight before Easter. One boy is positive that the same smell of dead rats occurred on two occasions; the last and most offensive, he thinks, about eight or ten days before Easter; the first and less powerful smell, though of the same kind, several weeks before Easter. It seemed to me as if some rats had congregated together, and had died in great numbers under the floor of the school near the door. In consequence, I sent to the clerk of the works to request that the floor should be taken up, and search made for the cause of the smell. The school was free from smell at eight o'clock on the morning when the stench occurred; at ten o'clock we all perceived the smell, and it prevailed, I think, all that day and a portion of the next."

It appears also that disagreeable smells were perceived in other places besides the school. Mr. White Cooper, the surgeon, who attended the family of the Dean of Westminster, says: "The family had been complaining of an unpleasant smell, as I ascertained, for some days previous to the attack. They stated that there had been a very unpleasant smell in the house, and certainly I can bear testimony to it myself as being a peculiarly disagreeable odour."

Mr. Lovick made a house-to-house inquiry among the residents, and received from them answers to the following effect: "Occasionally we have very offensive smells." "Sometimes

very dreadful." "More than ordinary at changes of the weather." "Mostly after rain and of a dull dark day, or after very wet, or very dry weather, and generally at every change of the weather."

The circumstances attending this outbreak of fever led to a minute examination of the sewers and drains running under the cloisters, the precise condition of which no one at the time appears to have been at all aware of. The locality where the fever had occurred presented in an intense degree that class of destructive evils arising from erroneous works of drainage, which usually constitute so serious a cause of epidemic disease in many parts of the metropolis. The subsoil was honeycombed with cesspools, and tunnelled underneath by enormous cavernous sewers of irregular forms and dimensions, having no regard to the volume of fluid they were intended to carry away; and, like so many similar works in the metropolis, they had become extended cesspools, filled to a depth of several feet with the putrescent deposit of ages. The odours in the houses were distinctly traced to these enormous sewers, the evaporating surface of which was estimated by Mr. Lovick at about 2,000 square feet.

In attempting to enter the sewers, it is stated that the workmen, "after several attempts to examine the sewer, were unable to proceed with the investigation;" that "the soil rose to the top of their long water-boots;" that "the contents of the sewer could not possibly flow into the public sewer;" that "they were obliged to get back, otherwise they would have got into the deep;" that "beyond a certain part the sewer was so foul that he could not get in at all;" and that the stench was so frightful "that a person who was not used to it could not have gone into it at all."

It appears that the foul air escaping into the cloisters and precinct, from the various apertures connected with these sewers, could not have been less than 54,000 cubic feet per hour, a quantity stated to have been sufficient to have filled the schoolroom in three hours, the houses in sixteen hours, and the Abbey itself in about ninety-three hours.

The Commissioners arrived at the following conclusions as to the remedies required: "We recommend that the whole of the branch as well as the main drainage under and about the school, and in the cloisters, be immediately taken up, and a system of tubular drainage, with adequate and regulated supplies of water, substituted; that the cesspools and privies be removed, and the watercloset apparatus laid down in their stead; and that, by means of efficient traps, all communication with the adjoining sewers be prevented as far as may be practicable."

In conformity with this recommendation a plan for combined works of water supply and tubular drainage was drawn up and executed in October 1848.

I called at the school, and saw Mr. Liddle, the head master, and Mr. Ryde, clerk of the works, who stated that the new drainage had answered perfectly well. Mr. Ryde informed me that there had been only one stoppage, which had been occasioned by the sinking of the bed on which the pipes were laid, under one of the joints, and from the workmen having neglected to remove the ring of cement inside the joint. The defect was speedily remedied, and since that time there has been no further obstruction.

At first, part of the drains used to be flushed, but for the last two years Mr. Ryde stated that this operation had not been performed, and that the usual waterflow had been found sufficient to keep them clear of deposit.

Before the change in the system of drainage Mr. Ryde said that there were "constant smells all over the place," but that there had been none since, and that the locality escaped without any illness during the last cholera, while the disease was ravaging the neighbourhood.

Mr. Liddle informed me that the drainage arrangements in his own house acted satisfactorily and without smell, and that the school has been healthy since the execution of the improvements, there having been no recurrence of fever cases amongst the scholars.

I have likewise communicated with Dr. Latham, the medical attendant, who states that "cases of measles, chicken-pox, mumps, and hooping-cough, have occurred from time to time, but that there have been no cases either of scarlet or continued fever, and none of small-pox."

It would thus appear, that while those severer forms of zymotic disease, connected with intense local causes, have disappeared since the execution of the sanitary works underneath and within the dwellings which were specially intended for the removal of those local causes; the general influence of the unimproved neighbourhood has continued to manifest itself in the occasional occurrence of the milder forms of infantile disease.

EXTRACT FROM MR. GRAINGER'S REPORT ON THE MODEL LODGING HOUSES OF THE METROPOLIS, SHOWING THE PROGRESSIVELY DIMINISHING MORTALITY AND IMPROVING HEALTH OF THE POPULATION IN THESE ESTABLISHMENTS.

ONG the numerous instances now accumu-d showing the beneficial results of sanitary rovement, one of the most illustrative is afforded by the experience of the Metro-tan Model Lodging Houses. The Model lging Houses in London, eight or ten in ıber, were constructed by their benevolent nders, with the express purpose of testing valuc of sanitary arrangements. Those for ilies consist of two or three rooms, each set ing a separate entrance*, a kitchen range, listinct scullery, an unlimited supply of er at high pressure, a separate water-closet, ıst shaft for the immediate removal of all ıse, and ventilation for each room. Some hese establishments — and this is a point of ortance — are situated in the most unhealthy lities in London, in Drury Lane, St. Giles's,

One establishment is only separated by arrow street from Church Lane, St. Giles's, of the most notorious fever nests in the tropolis, which was most severely attacked cholera, and where fever is scarcely ever ent.

n May, 1851, I personally examined seven of the then eight existing establishments. e inhabitants (concerning whose health I in-uted a searching inquiry) then amounted to 07, of whom 726 were children — a class st susceptible of zymotic disease. There had n only one case of typhus from the com-nencement; and yet one of the institutions, h 550 inmates, had been opened three years l a half. At the time of the cholera the ulation of these houses amounted to 795; l yet there was only one case of cholera, ilst among the population of London generally, luding all classes, one person in every 151 died, l about one in every 75 was attacked.

The statistics of the Metropolitan Buildings, l Pancras Road, are peculiarly instructive inasmuch as they have been now open nearl five years, and contain a fixed population, of whom many are labourers and mechanics. Up to May 31, 1851, the yearly mortality had been somewhat more than 2 per cent. of the inmates, which, though high, is less than the average mortality of England.* I have lately again visited this establishment; and the results are even more remarkable; for during nineteen months, up to October, 1852, with an average population of 640, and the large proportion of children remaining the same, there have been only thirteen deaths, 1·2 per cent. per annum. or at the rate only of 12 in the thousand. The rate of mortality in England and Wales at present is 2·2, or 22 in the thousand; in the Metropolis it is 2·39, or nearly 24 in the thousand; in Liverpool it is 3·43, or upwards of 34 in the thousand, while in the part of Surrey not included in the Metropolis it is 1·72, or 17 in the thousand.

But properly to estimate these facts, it must be stated, as shown below, that the number of children, which, if considerable, always raises the mortality, in the Metropolitan Buildings considerably exceeds the proportion in London generally; in 1851, for example, they formed 62·3 per cent. of the total inmates; and yet the mortality among them was only 2·5 per cent.; whilst in the metropolis, in 1841, the number of children under ten years of age was 21·7 per cent. of the whole population, and the mortality was 5·2 per cent., or nearly double that of these model houses. The experience of the last nineteen months still shows the same exemption from fever as in the earlier years, not one death having occurred from that cause; nor was there any death from small-pox or scarlet fever. Two cases of small-pox occurred among the adults, both of which recovered; and it is interesting to observe that the disease did not spread, not a single child having been attacked. Whenever, on the contrary, a case of small-pox occurs in the crowded habitations of the poor, and especially in the common lodging houses, it is notorious to medical officers that it spreads rapidly among the sickly and predisposed population around. I recently had oc-

As showing the value which the industrial classes set on privacy which is one of the attractions of "home," I may ition that at Tynemouth it has been the practice for at 20 years to make a separate door of entrance for each set ooms; and the people so much appreciate this, that where rent is 8*l.* or 9*l.* per annum, I was told by one of the nts, it was considered to increase the value 30*s.* a-year.

* This apparently high mortality arose from the very large number of children in this establishment, being treble the proportion of children under ten years of age in the Metropolis generally. Had the proportion of children been the same as in the Metropolis, the mortality would have been reduced one-half. — Report on the Present State of certain Parts of the Metropolis, and on the Model Lodging Houses of London. By R. D. Grainger, Esq., p. 29.

easion to inspect a house in Grosvenor Market, Oxford Street, immensely crowded, containing eighty-eight persons; a child was attacked with small-pox, and three others were affected in succession in the same house. In a small court at Gloucester, with eleven houses and twenty-two families, blocked up at both ends, and approached by a narrow winding entry, I found there had been within the last two months thirteen cases of small-pox and three deaths, all, as far as could be made out, occurring in unvaccinated children.

The results given above are most remarkable in themselves; and they will become more so, when it is explained that the district around these Metropolitan Buildings is very unhealthy. In 1849, cholera prevailed in the immediate vicinity, so that in one house three fatal cases occurred; and by a return, showing the deaths from zymotic diseases in the registration district in which these model buildings are situate, it appears there have been, from June, 1851, to the present time (November 18th, 1852), in a population of 16,000, 137 deaths from zymotic diseases, including nine from small-pox, sixteen from scarlet fever, nine from croup, forty-four from diarrhœa, six from cholera, twenty-six from fever, and three from erysipelas; from all of which diseases, constituting the most destructive members of the epidemic class, there were not in the Metropolitan Buildings, during the nineteen months included in my last report, a single death. In consequence of the high health enjoyed by the inmates, and the superior accommodation afforded for the same or less rent than elsewhere, poor families anxiously solicit admission whenever there is a vacancy; in proof of which it will suffice to state that, when the Streatham Street establishment for forty-eight families was opened, there were more than 200 applicants. It has also been mentioned to me, that medical practitioners have recommended persons with sickly families to obtain a set of rooms, if practicable, for the sake of the superior healthiness.

The general conclusion to which all the instances here adduced leads, is that the destructive diseases which sweep off the poorer part of our town population — fever, diarrhœa, cholera, scarlet fever, &c.,— are, by sanitary measures, capable of immense reduction. Indeed, experience justifies the assertion, so far as the most destructive of these pestilences is concerned, that as intermittent fever or ague has been eradicated in many rural districts by drainage and other improvements, so also typhoid fever might be extirpated by perfect sanitary arrangements.

VI. Extract from Dr. Sutherland's Report on Westminster, illustrating the Changes effected by Sanitary Improvements in an Epidemic Locality called Champion's Alley.

There is one well-known epidemic locality called Champion's Alley, which has undergone a more thorough sanitary improvement by the enterprise of a private individual than any other similar spot in the metropolis, at least so far as I have hitherto observed. This court was formerly unflagged, and consisted of miserable filthy houses with cesspools and all the other concomitant abominations, which have been removed and replaced by pan water-closets. It used to be a perfect hot-bed of zymotic disease, and always yielded a large number of scarlet fever cases.

Messrs. Pink, the builders, give the following account of the improvements they carried out in Champion's Alley, in a communication I have received from them on the subject. "The houses are now substantially rebuilt on both sides of the court. The public passage-ways are newly paved, as are also the whole of the back yards of the houses. The new water-closets have answered very well, no stoppage having occurred, to our knowledge, but once, and that through some person having thrown down rags and pieces of wood. The premises are drained into the common sewer in Market-street, commencing with a nine-inch pipe drain two-thirds down the court, six-inch branch drains thence to the water-closets, and four-inch pipe drains from the six-inch drain to all the rain-water pipes, sinks, cisterns, &c., with proper bends and junctions carefully executed, so as to offer no impediment to the free discharge of the contents into the sewer, all cesspools having been previously filled up. The water-closets are supplied from large slate cisterns, their size ensuring a constant supply. These cisterns form the roofs and ceilings of the several water-closets.

"The present occupants are clean in person and seem desirous of maintaining their present cleanly condition, decidedly different in these respects to the former inhabitants previous to the alteration. The rents of the houses, as com-

d with the same class of dwellings unim-
cd, are about one-third more, and the
es are, notwithstanding, in much request.
The water for the domestic purposes is
mes water, and supplied from the same large
rns which serve the water-closets. It is in
case conveyed into the back kitchen by a
en pipe with a tap over a sink. The health
he court, compared with what it was before
improvements, is decidedly amended.
The improvements in this court have led to
efficient drainage of several other premises
cuted by us in the same locality, and by the
stitution in several instances of the patent
er-closet. The works were finished and oc-
ied in 1850."
There are five houses in the court, and the
t of the drainage was about 37*l.*
The houses now look as if they belonged to a
erior class from those usually inhabited by the
ouring population; and the court is healthy.
e locality is the same; its sanitary condition
ne is altered, and the external results are
hly satisfactory when contrasted with the
etched condition of other places in the im-
diate vicinity. Those persons who have seen
h their own eyes the miserable and unwhole-
ne state of the great majority of the dwellings
the labouring classes, can alone understand
feelings of satisfaction to which such im-
vements give rise.

I. General Powers under the Nuisances Removal and Diseases Prevention Acts.

places where the Public Health Act is not
force, the Nuisances Removal and Diseases
evention Acts vest certain powers in Town
uncils, or where there are no Town Councils,
Improvement Commissioners; and, failing
se, in Commissioners of Sewers and Boards
Guardians, for the purposes of cleansing and
removal of nuisances.
Those powers which are permanent and ge-
ral, and of an eminently practical character
th reference to their special object, though they
not include powers for making permanent or
uctural works of any kind, are the following:—
On complaint in writing by two householders,
failing them by the relieving or medical
icer, stating, —
"That any dwelling-house is in such a filthy
d unwholesome condition as to be a nuisance,
injurious to the health of any person:

"That upon any premises within the jurisdiction of the local authority there is any ditch, gutter, drain, privy, cesspool, or ashpit in a foul and offensive state, so as to be a nuisance or injurious to health:

"That upon any such premises swine, or any accumulation of dung, refuse, or other filth, is kept so as to be a nuisance or injurious to health:

"That in any premises used wholly or partly as a dwelling-house, or underneath any such premises, any cattle or animal be kept, so as to be a nuisance or injurious to health, —

"The local authorities are bound, after twenty-four hours' notice in writing, to enter the premises, and to examine the alleged nuisance; and if, on such examination, or on the written certificate of two legally qualified medical practitioners, the complaint appears to be well founded, the local authority may make complaint before a justice, who must thereupon summon the owner, or occupier.

"On the hearing of this summons the justice may make an order, in the form given by the statute, for cleansing, whitewashing, or purifying the premises;

"Or for removal or abatement of the causes of complaint, in such manner and time as may be specified in the order, not, however, allowing more than two clear days, exclusive of Sunday, after service of the order.

"On default of the person on whom the order is made, he becomes liable to a penalty not exceeding ten shillings for each day of default; and the local authority may enter, cleanse, whitewash, purify, or abate or remove the cause of complaint, and do all works that may be necessary for carrying the order into effect.

"The dung, manure, filth, and other refuse which is removed may be discharged or sold by the local authority, and the money applied in aid of poor rates.* (Vide Nuisances Removal and Diseases Prevention Act, 1848, sect. 1., and Nuisances Removal and Diseases Prevention Amendment Act, 1849, sect. 6.)

"The expense incurred in these proceedings may be defrayed out of the poor's rates (sect. 7., Nuisances Removal and Diseases Prevention Amendment Act, 1849), where there has been an order of justices made for the removal or abatement of the cause of complaint, or where

* In Scotland the local authority is different, but the powers are substantially the same. Vide Nuisances Removal and Diseases Prevention Act, 1848, sect. 2.

there has been no such order, provided the amount does not exceed twenty shillings.

"Besides the above permanent provisions, the Act contains a further provision rendering it compulsory on the highway surveyors to scour, cleanse, and keep clear all open ditches, gutters, drains and watercourses upon, adjoining, by or along the sides of any highway.

"The General Highway Act (5 & 6 W. 4. c. 50.) empowers surveyors to do this; but by the Nuisances Removal Act the duty is made compulsory.

"This section applies to Scotland, also to surveyors appointed under 8 & 9 Vict. c. 41., but does not apply to persons discharging similar duties in relation to turnpikes."

The Act further provides that whoever suffers any sewage, drainage, soil, filth, or any offensive or noxious matter to run into or remain in any open ditch, gutter, drain, or watercourse, so as to be a nuisance or injurious to health, —

"From any dwelling-house, building, or other premises *not occupied before the passing of the Act* (4th September, 1848):

"From any privy or water-closet not constructed before that time,

shall be guilty of misdemeanor, and shall be liable, besides, to a daily penalty not exceeding 5*l.* while the offence is continued." (See 7.)

It is to be observed that to justify the interference of the local authority in the case of the above causes of complaint, it is necessary that what is complained of should, in the words of the statute, "be a nuisance to or injurious to the health of some person."

But it is important to bear in mind that it will not be necessary to prove in all cases either a nuisance or injury to the health of a particular person. If the nuisance be public, or the injury to health (by the evidence of medical witnesses) general, this will dispense with any proof of nuisance or injury to individuals.

The words of the statute suggest the true legal definition of "nuisance."

There is no legal foundation for the opinion (which the General Board have found extensively held), that to constitute anything a *nuisance* it must be proved dangerous or injurious to health.

The law considers as a nuisance whatever causes inconvenience, as well as whatever causes damage. Thus every thing is a nuisance which corrupts the air or gives rise to offensive smells; a public nuisance, if the source of offence be so situated as to affect the public, as, for example, near a public highway or in a crowded neighbourhood; a private nuisance, if it extend only to the inhabitants of a particular room or a single house.

The law is explicit on the point, that injury to health is not necessary to constitute a nuisance. "It is not necessary," says C. J. Abbott (R. v. Neil, 2 C. & P.), "that a public nuisance should be injurious to health. If there be smells offensive to the senses it is enough: the neighbourhood has a right to pure and fresh air."

And on the question of how far the presence of other nuisances can be considered to justify the maintenance of the particular one complained of, he remarks, "It has been proved that a number of other offensive trades are carried on near this place, knackers, makers of kitchen stuff, &c.; but the presence of other nuisances will not justify any one of them, as the more nuisances there were, the more fixed they would be. However, one is not the less subject to prosecution because others are culpable. The only question, therefore, is this — "*Is the business, as carried on by the defendant, productive of smells offensive to persons passing along a public highway.*" Hence the statute draws a manifest distinction between a cause of complaint being a nuisance, and a cause of complaint being injurious to public health.

Every public nuisance, it may be remarked, includes a private nuisance; and proof that the cause of complaint is a public nuisance would support proceedings under the statute.

These powers are obviously intended to apply to a class of evils which, though subordinate to those for which the only remedies are efficient drainage and an abundant water-supply, still exert a most important influence in the localization and spread of epidemic diseases. By the general and vigorous exercise of these powers to the extent to which Local Authorities are everywhere empowered to enforce them, many fruitful sources of disease might be immediately diminished or removed, particularly in the worst localities, and a great improvement effected in the public health.

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WEIGHT UNDER HALF AN OUNCE.

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Dr. Buchanan's Report (Dec. 30, 1862) on the Health of the Operatives in the Cotton Towns of Lancashire, as affected by the prevailing Distress.

The following is my report of the results of the inquiry which, pursuant to instructions, I have for two months been engaged in making into the sanitary state and circumstances of the principal distressed cotton towns in the north of England.

Want of employment.

A population of 2,000,000 has been for several months cut off from an adequate supply of the material on which their prosperity depends. Nearly half a million of them are comprised in the class of cotton operatives; and another half million at the least may be taken to be directly dependent on their earnings. The welfare of the remaining half of the population is to a great extent involved in the fortune of their neighbours. Of the half million of cotton workers, as nearly as possible 50 per cent. are estimated to be quite out of employ; and of the others, 33½ per cent. are working at short time, while 16½ per cent. only are at full work.

Taking the cotton districts as a whole, therefore, their state may be thus exhibited. Of every 24 persons, six are cotton workers, who habitually support other six. Of the six cotton workers, three are now earning nothing, two are earning part wages, one only is at full work. Of the six persons dependent on them, one only could now be supported up to the ordinary mark. The remaining 12 persons, whose welfare is indirectly dependent on the cotton trade, will consist of about four persons who are earning, seven who are dependent on those four, and perhaps one who is a pauper. Of the four who are earning, it is safe to say that only two have their usual incomes. One cotton worker then, and two other persons, or three in all, are the only people out of the 24 who retain their full power of earning.

Relief of distress.

To the people who are rendered destitute by this enforced idleness assistance has been given, not only by the ordinary machinery of parochial relief, but by an organisation which for its magnitude and promptness, its spontaneity and general wisdom, is probably without any parallel. While the poor's rates are giving the means of subsistence to some 110,000 persons, it is estimated that the relief committees are supporting 170,000, and that another number of 160,000 is receiving assistance from both these sources. Nor does this total of 440,000 represent the whole number of persons receiving relief. Private charity has enabled a further considerable number to make no appearance among the recipients of public aid.

Typhus fever.

Yet in spite of the vast efforts made to assist the unemployed, one of the most lamentable consequences of extreme destitution has made its appearance. The prosperous cotton towns of Lancashire* have been wholly exempt from typhus fever (of the true Irish type) since 1847–8, when it prevailed epidemically, and was fatal to an extent only exceeded among the starving population of Ireland. In the present year this steady follower on famine has again appeared, and in Preston and Manchester has assumed an epidemic form. Rare cases of the summer have multiplied to scores in the autumn. At Preston 227 cases of this fever are known to have occurred between midsummer and the end of November; and those attacked have died at the rate of about 23 per cent. In Manchester there have probably been at least 100 attacks and 20 deaths in the same period. In some other towns scattered cases of the same disease appear to have been seen.

Need of further inquiry.

The existence of typhus fever suggests by itself doubts as to the complete success of the measures that have been adopted for the relief of the distress. But on inquiry being made into the circumstances under which this disease prevailed in Preston and elsewhere, the existence of other morbid conditions was detected which tended to corroborate such doubts. Some of these conditions consisted in a simple decline from the normal standard of health and strength, while others constituted positive disease. For example, stray cases of scurvy attracted attention at an early period.

Nature of inquiry.

Special inquiry has therefore been made (Part I.) into the nature, degree, and localization of any morbid conditions affecting the distressed communities. With reference to these the amount and nature of the sustenance of the poor has been investigated, and peculiarities in their domestic state and habits have been noted (Part II.) in so far as they have appeared to bear on strength and health. This inquiry† has

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* With, perhaps, the exception of Manchester. Liverpool is not counted among the cotton towns.

† Towns in which there has been typhus fever, or rumours of it, have received the largest share of attention.

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embraced observations as to the general vital state of the people by myself and by thirty medical practitioners holding public appointments; the collection of information from boards of guardians and relief committees in twelve of the principal cotton towns, and in some cases conferences with the local sanitary authorities.

Part I.

I. Concerning existing morbid conditions related to distress.

The following were the towns visited:—

Ashton.	Manchester, city.
Blackburn.	Oldham.
Bolton.	Preston.
Bury.	Salford.
Chorley.	Stockport.
Darwen.*	Wigan.

Certain morbid conditions, such as are not accounted for by climatic peculiarities, have been discovered to exist in the cotton districts with exceptional intensity at the present season.† These will be usefully classified according as they are likely to be connected, with an especial prevalence of the following, viz.:—

A, with insufficient or innutritious diet.
B, with cold, exposure, bad ventilation.
C, with special want of cleanliness in and about houses and persons.
D, with the above influences in combination; herein epidemics.
E, with moral peculiarities engendered by the distress.

A. Connected with insufficient diet, &c

Under the head A is first to be noticed a loss of strength, colour, and flesh among the cotton workers as a body. In all the towns visited, with the exception of Bolton and Bury, these conditions have attracted the notice of medical men.‡ Those who have charge of the poorer districts have noticed this deterioration more than others. Universal emaciation and pallor do not indeed at first strike a visitor to these towns. The girls in the sewing schools do not as a body present much contrast to those still at work in the mills. But when the visitor penetrates into the homes of the poor, he observes a very different standard of health. There is a wan and haggard look about the people, that he will hear from those who know them well is nowise habitual to them. He may see for himself the truth of an observation constantly made by the medical men, that the parents have lost their health much more generally than the children, and particularly that the mothers, who most of all starve themselves, have got pale and emaciated. At Ashton was added the testimony that mothers have become weaker in childbirth and faint readily from any excess of hæmorrhage at that time. Lactation has been noticed to be unwisely prolonged, the mothers pleading inability to purchase the food appropriate for a weaned child. Actual anæmia has been found prevalent in some places.

Asthenia.

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* Darwen was visited on account of a special outbreak of typhoid fever. It is not throughout included in the statements of this report, but only where its experience threw light on some particular point.

† It is difficult to say positively whether or not there has been an unusual total amount of disease in the cotton towns. The union medical officers have on their books almost universally an increased number of patients; in some cases even 10 times as many as in the corresponding months of 1861. Similar calls are made on the public dispensaries. But in the main this increase only follows the increase in poverty, and perhaps, as a rule, the numbers who are getting public medical relief have not risen in the proportion of the numbers who are getting other public charity.

The deaths from all causes in the 12 unions visited have shown the following variations in the last six September quarters:—

1857.	1858.	1859.	1860.	1861.	Average of 5 years.	1862.
8,912	8,576	7,852	7,229	9,197	8,353	7,427

The death rate of 1862 may be considered as practically identical with the lowest death rate in 1860, remembering that the population has been increasing. But in both these years an exceptionally cold wet summer has influenced the mortality. In England, as a whole, however, the subsidence of mortality in 1862 was not to the degree of 1860. It may therefore be inferred that the mortality of the cotton towns last September quarter was low to a peculiar degree. The same cannot be said for the colder quarter ending March 1862, when the mortality of these towns was high. It is from the experience of the last cold quarter, and not from the summer of 1862, that we should most safely predict the rate of mortality for the ensuing winter.

‡ Perhaps no better single evidence as to the above fact could be had than the statement of the late resident medical officer of the Manchester workhouse, who has recently been appointed to the charge of a district almost exclusively inhabited by cotton workers. Between the habitual paupers of the workhouse and the thriving operatives of Ancoats it was to be expected that some difference would have been observable in respect of constitutional state and of resistance to disease. But in truth an experienced medical eye could draw no present distinction between the two classes.

Children appear to have suffered less in their strength and apparent robustness. Rickets and tuberculous disease among them have not appeared with any special frequency, unless it be at Preston and Stockport. Some practitioners are in expectation of an increase in these maladies, — in existing children, from prolonged suckling and from want of milk after weaning, and in children yet to be born, from the debility of their parents. On the other hand, one main cause of rickets, the injudicious hand feeding of children who ought to be at the breast, is probably less active now the mothers are at home instead of working at factory.

In almost every town a generally asthenic type of disease peculiar to the present season has been observed by those practitioners who are brought most in contact with the diseased poor. This has been most conspicuous in Preston, and also notably in Ashton, Oldham, and Stockport. It has been least noticed in Bolton, Bury, Manchester, and Wigan. In the four first mentioned towns, among others, an unusual quantity of stimulant has lately been found necessary in the treatment of disease in general. Practitioners in Preston, Blackburn, and Oldham have remarked that antimony is particularly ill borne, and at Preston a singular facility to salivation by mercury has been noted. This was also mentioned in Salford.

Diarrhœa.

In the town of Preston, through the summer and autumn, there has been a large excess of diarrhœa beyond what is usual in other years, and the disease has been especially intractable. In no other town has any such excess been observed. In Ashton, Blackburn, Bolton, Bury, and Stockport there has been far less autumnal diarrhœa than usual.* Cases of dysentery, in no great number, yet still of exceptional frequency, have been seen in Chorley, Oldham, Salford, and Wigan. Diarrhœa has been a constant concomitant of measles at Ashton and Chorley. Except in these towns no prevalent disease has been actually complicated by it.

Hæmorrhage.

A hæmorrhagic tendency has been witnessed in several towns; actual scurvy has been seen among cotton workers in Stockport, Preston, Blackburn, and Salford. Almost all the cases were in women. Purpura has given a few cases in many of the towns; the largest number appearing to have been in Preston, Blackburn, and Stockport. No special disposition to hæmorrhage has been noted as a complication of ordinary disease, with a few exceptions. At Preston and Oldham practitioners have observed that (without mercury) the gums are apt to be swollen and bleeding. Blood in the stools in ordinary diarrhœa and the hæmoptoic tendency in phthisis were spoken of by one or two practitioners as being more than usually noticeable.

Ulcer.

A disposition to ulcerate or slough, apparently in consequence of altered diet and habits, has been observed in one or two cases in Blackburn; but by no one with any frequency, except by one district surgeon in Manchester, who says that in his practice all bruises and slight wounds are singularly difficult to heal. In Ashton, Chorley, Manchester, and Salford cases of bullous skin-disease, pemphigus and the like, were mentioned as of peculiar occurrence. Boils and carbuncles have been of their usual prevalence in all the towns, except that they were thought to be in excess in parts of Preston and Salford. Ulceration of the cornea was inquired for, but was only heard of with special prevalence at the Manchester Children's Hospital and the Salford Dispensary. To a less, though perhaps an unusual, degree, it has been seen in Wigan and Oldham. Ophthalmia has not existed with such frequency as to call for special remark, except in complicating measles in Chorley, in the families of the unemployed. At Oldham ophthalmia was common in a similar class of persons. In Wigan and Preston respectively, one practitioner has found it very common, but not among the cotton workers so much as in the families of Irish labourers.

B. Connected with cold, bad air, &c.

B. Inquiring next into the existence of exceptional morbid conditions of a sort to be dependent on cold, exposure, or bad ventilation, phthisis and lung disease chiefly present themselves for consideration. Phthisis is habitually in excess among cotton operatives, owing to their peculiar industrial circumstances. It is too early in the history of the distress to expect even a vague answer to the question, Is phthisis being generated with exceptional frequency under the new conditions under which the operatives are placed? It does not appear, however, that old phthisis has been proving especially fatal of late, at any rate it has not

Lung disease.

* In England at large diarrhœa has produced fewer deaths in 1862 than in average years.

been more so than would be accounted for by the cold weather of November Bronchitis and pneumonia,—the former especially,—have been, by the universal testimony of medical practitioners, of singular prevalence. Whether they were of signally greater amount than they would have been without the distress in a season so inclement as the present November* is a question not easy to answer positively. But it was maintained that this has been the case in all the towns visited, with the exception of Preston and Ashton, whose practitioners regarded the frequency of these disorders as only what they expected from the early onset of winter. Ashton, Blackburn, Bury, Chorley, towns where measles have been epidemic, have found this disease to have serious lung complications with quite unprecedented frequency. In like manner whooping-cough has been incessantly complicated with inflammation of the lungs, in the practice of the Children's Hospital at Manchester and at the Salford Dispensary. But here the great prevalence of such secondary lung disease could not be connected very certainly with the existing distress.

Rheumatism was said to be particularly common, among other places, in Ashton and Wigan.

Of diseases likely to result from breathing impure air in overcrowded and ill-ventilated rooms, some have been already referred to, and the epidemics will be immediately considered. Convulsions in children was asked about, and seemed to be of no especial prevalence. This is one of the maladies at ordinary times very common among infants in the manufacturing towns.

C. Connected with want of cleanliness.

C. As to the prevalence of diseases likely to result directly from want of cleanliness. An unparalleled quantity of itch has been observed in Blackburn, Manchester, Stockport, and Salford. In the same towns, and in Oldham, diseases of the eczema and impetigo class have also been particularly rife.

D. Epidemics.

D. Epidemic diseases, fostered as they are by bad diet, bad air, and want of cleanliness, constitute a further index to an exceptional prevalence of these agencies. Putting aside sporadic cases, the following complaints were met with in an epidemic form:—Chicken-pox in a part of Manchester; measles in Ashton, Blackburn, Bury, Chorley, Manchester, and, to a less extent, in Salford, Preston, and Wigan; whooping-cough in Chorley, Manchester, Salford, and Stockport; scarlatina in Ashton, Darwen, Manchester, Oldham, and, a month or two before, in Stockport; typhoid rather frequent in Bolton, Bury, Chorley, Darwen, and Stockport; true typhus cases seen in Preston, Manchester, and Chorley. Of chicken-pox, whooping-cough, and typhoid, no further mention need be made. Measles has been characterized in Ashton and Chorley by the singular amount of diarrhœa accompanying it, and here, as well as in Blackburn and Bury, by the universality of its lung complication. Ophthalmia, as frequently attendant on measles in Chorley, has been before mentioned. Scarlatina in each place of its occurrence has been distinguished by the extreme degree to which it has affected the mucous membranes. Very bad throats, with nasal discharges and glands in the neck greatly swollen, have been commonly observed, and in some places, as at Oldham, has given a highly fatal character to the epidemic. In this town, of 72,333 inhabitants, no fewer than 169 deaths from scarlatina were registered between midsummer and December 1st.

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True typhus has already been considered sufficiently for the purposes of this report in the introductory part. Its existence gives perhaps the strongest evidence of a deteriorated physical state among the unemployed operatives. Here it is only needful to add that its death rate is that of a severe form of the epidemic, comparing it with the experience of London.

E. Connected with social changes.

E. Lastly, viewing the social and moral changes that might have resulted from the Lancashire distress, are there any exceptional morbid conditions that are likely to be related thereto? On few subjects was more singleness of opinion shown than on the amount of disease and mortality among children. Medical men and registrars agreed that, apart from special epidemics, the ordinary maladies of childhood have been very lightly felt up to the present time. This fact was imputed with almost equal unanimity to the greater care bestowed on infants by

* London meteorology showed in some weeks of this November a mean temperature lower by six degrees of Fahrenheit than in the same weeks of ordinary years. This was when frosts were slight and intermitting in London, but when in North Lancashire the ground was covered with snow for more than a week together.

their unemployed mothers than by the hired nursery keepers.* Though the mothers, from poverty or ignorance, still feed their children very injuriously, at least the little ones are safer against death by neglect or opium.

Under this heading comes another statement made with equal decision by medical observers. Drunkenness, with the diseases and accidents produced by it, is unequivocally less in the mass of the cotton towns. In Manchester, Salford, and Wigan only has this vice shown itself to its ordinary amount, and in these three towns there are probably the largest number of persons following other occupations than the cotton trade.

Venereal disease appears to be in excess of its average amount in Preston, and possibly in Stockport. It is believed to have decreased in Blackburn. All other statements about it are negative.

Summary of Part I.

To sum up the result of this inquiry, selecting only the most certain and widely spread conditions, it may be asserted:—

1st. That while actual death from starvation has been of the rarest occurrence, there is a peculiarly low state of health among the unemployed operatives of the cotton towns, showing itself particularly in the elder people, and predisposing to various diseases.

2nd. That scurvy and other evidences of a tendency to hæmorrhage have been seen with remarkable frequency.

3rd. That lung diseases of a sort to be induced and aggravated by exposure have been rife, even out of proportion to the cold of the season.

4th. That epidemic measles and scarlatina have habitually exhibited peculiarities that in ordinary times are only met with in weakly constitutions. That true typhus fever has shown itself. That epidemic diarrhœa has been below the average, except in Preston, which is the town that has suffered most from typhus fever.

5th. That disease from drunkenness and from neglect of children has been less common than in ordinary times.

Part II.

II. Concerning existing distress.

The other division of the inquiry consisted in ascertaining the existing state and habits, income and expenditure of the poor. Facts bearing on this subject were gathered in detail, and are reported separately for each of the twelve towns visited. Here, although no two towns are alike in all respects, a general statement may be attempted. In order to connect this statement with the facts given in the first part of the report, the arrangement of the subject will be similar to that therein employed.

A. Amount of income.

A. The amount of average income of the poor and the portion of it that is available for food; the sort of food obtainable, or habitually obtained by the poor, and its mode of preparation as affecting nutritive value. The pressure of the distress is much greater and has been felt much longer in some towns than others. Preston, Ashton, Blackburn, and Stockport, for instance, have been more severely and earlier affected than Oldham, Bolton, or Bury. Some towns again are exclusively dependent on the cotton trade. Others have machine making, bleaching and dyeing works which follow the stagnation in the cotton trade. A third set have other and independent industries, as the coal trade in Wigan, Chorley, and Bolton, the iron foundries of Manchester, Bolton, and Bury, the silk and flax mills in Manchester and Salford, and the woollen trade in Bury. All of these other industries have continued to furnish employment to a very large proportion of their usual hands. It is plain that when certain members of a community or of a family have these resources, the depression of the whole body is less than when it entirely consists of cotton operatives. This is one of the considerations that present obstacles to any precise summary statement of the income of the unemployed.

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* When the urgency of the present crisis has passed away, the power of the Lancashire manufacturers in solving difficult social problems cannot be directed to a better end than in organizing means for preventing the scandalous loss of life that prevails among the infants of their female operatives. Among other suggestions to such an end this fact may be stated: At well-arranged infant nurseries in London, children can be maintained through the whole of a working day, and returned in health to their mothers on payment of 2*d.* for an infant and 4*d.* for a child requiring meat. In the cotton towns, children consigned to the care of any ignorant beldam cost 3*s.* a week; how they are fed and how they are drugged, their high mortality will show.

Nor in any one town is there a rule of strict application to all classes of the destitute alike. The personal character and former position of the distressed; their presumed ability still to earn a trifle by their own labour, although unemployed in the mill; the fixedness of the family in the eyes of the poor law; these are samples of the points that are thought of in estimating the scale of assistance to be given to destitute cotton workers. Families of this class who are only temporarily requiring public aid are generally assisted more liberally than those of the class of habitual paupers.* There is often one scale for the poorest class of cotton workers who are wholly destitute, and a higher scale for the better sort of operatives, particularly for any who are getting scanty earnings as half-time workers. As a rule, the former class falls to the charge of the guardians, the latter is mainly supported by the relief committees. The same persons receive relief from both sources in some towns; in other towns they are excluded from relief by the one, if they are in receipt of it from the other source.

Taking the great mass of the cotton workers with their families as a whole, their average income (in the present December) from all sources is nearly 2*s.* per head per week. This is exclusive of clothing, bedding, and firing, which are now usually supplied in addition. There are few relief committees which do not bring up the family income to more than 2*s.* per head per week (earnings or parish help therein included), while in some few instances the total is made up to 2*s.* 6*d.* per head per week. On the other hand, there are few boards of guardians that are giving so much as to bring the total income to the average scale, certain of them expecting the charitable funds to supplement the parish allowance, while others have been satisfied that the total income from all sources should reach 1*s.* 6*d.* or 1*s.* 8*d.* per head per week. In many unions, two months ago, sums even under these scales were expected to suffice.

"Scale" of income.

In speaking of a scale of income per head per week, it is meant that a family of average number would get this amount per head, nor does the scale per head apply with exactness to any other family. Thus, a single person would be in receipt of more than the scale, the youngest children in a large family get less than the scale. Generally the distribution is made somewhat in the following manner:—For a single person the income is brought up to the full amount and two-thirds over; the second person of the same family is reckoned to want the full amount and one-third over; all children above 16, living with their parents, about the same amount as the last; and each of younger children about a half or two-thirds of the scale.† Thus in practice the subjoined families would get per week about the amounts annexed:—

On a Scale of	*s.* *d.* 1 4	*s.* *d.* 1 6	*s.* *d.* 1 8	*s.* *d.* 1 10	*s.* *d.* 2 0	*s.* *d.* 2 2	*s.* *d.* 2 4	*s.* *d.* 2 6
One person - -	2 2	2 6	2 9	3 0	3 4	3 9	4 0	4 2
Man and wife - -	4 0	4 6	5 0	5 6	6 0	6 6	7 0	7 6
Man, wife, and young child	4 8	5 3	5 10	6 5	7 0	7 7	8 2	8 9
Man, wife, and 2 children (or 1 grown up child).	5 4	6 0	6 8	7 4	8 0	8 8	9 4	10 0
Man, wife, and 3 children	6 0	6 9	7 6	8 3	9 0	9 9	10 6	11 3
„ „ 4 „	6 8	7 6	8 4	9 2	10 0	10 10	11 8	12 6
„ „ 5 „	7 4	8 3	9 2	10 1	11 0	11 11	12 10	13 9
„ „ 6 „	8 0	9 0	10 0	11 0	12 0	13 0	14 0	15 0

* To deal liberally with the cotton workers, while the allowance to common paupers and labourers out of employ is kept at its usual standard, is the principle adopted in some towns. The rule appears sound, but one of its effects is, that the habitual paupers who, as beggars and parasites, usually add to their parochial allowance, and cannot now eke out their living thus, are feeling the uttermost privation. Many of this class are Irish, who, in addition to their privation, have the further predisposition to disease that comes of huddling together in dirty cellars and hovels.

† The larger proportion of income secured to the first members of a family is intended partly for the larger quantity they eat; partly to supply them with necessaries other than food, to which a very small addition will serve for the children; rent and candles, for example. By this unequal distribution, however, it sometimes actually results that *sixpence* a week is the allowance for each of the younger children. Thus the Salford union relieves families wholly unemployed on an eighteen-penny scale, as follows:—

	s. *d.*		*s.* *d.*
1 person - -	2 6	5 persons - -	6 6
2 persons - -	4 0	6 „ - -	7 0
3 „ - -	5 0	7 „ - -	7 6
4 „ - -	6 0	8 „ - -	8 0

That the children are not starved is due to the Salford Relief Committee. In other places the excess to the first members was not so great, and the younger ones got a larger allowance than is shown in the text; thus at Darwen, with a two shilling scale, the relief committee only gave 2*s.* 6*d.* to a single person unemployed.

Expenditure.—As clothing and bedding are either retained from better times or are given by the charitable committees, and in extreme cases are done without or supplied by the guardians, they need not be considered under the head of expenditure. Nor at present does fuel constitute a usual item of expense, though up to November outlay on this score was an important deduction from the incomes of the poor. The amount of money that is above spoken of as incomo is really required to meet four several sorts of outlay; (*a* and *b*) for food and for the profits of retail shopkeepers; (*c*) for supplementary necessaries; (*d*) for rent. Expenditure;

(*a* and *b*). The separate consideration of these two items is rendered necessary by the varying practice of the relieving bodies. The guardians in ordinary times give half their relief in kind, but latterly have often given the whole in money. The relief committees have sometimes given their whole assistance in kind, sometimes partly in kind, sometimes wholly in money. Relief in kind, again, is given in more than one way, either by distribution from a store where all articles are reckoned at their contract value, or by tickets on certain shopkeepers which represent so much money in procuring stated articles. Or, again, the tickets may procure from any shop any article of food that is not positively wasteful, and then this mode of relief closely resembles relief in money. The extremes are relief wholly in money, relief wholly in kind from a store at contract prices. Under the one or the other plan there is an important difference in the amount of food that is procurable with the same nominal value of income. in food and retail profits;

The degree of this difference may be illustrated by the prices of some of the articles of most ordinary consumption at two retail shops and at the stores of certain relieving bodies. The quantities here mentioned are such as a single person would be likely to purchase for a week's consumption:—

Articles purchased.	Retail prices.		Contract Prices.			
	A Shop at Manchester.*	A Shop at Preston.	Guardians, Stockport.	Relief Committees.		
				Bury.	Bolton.	Manchester.
	s. *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*	*s.* *d.*
Bread, 8 lbs. -	1 0	1 1	†0 9	1 0	1 0	0 11
Potatoes, 5 lbs.	0 3	0 3	‡0 3	‡0 3	0 $2\frac{1}{2}$	‡0 3
Oatmeal, 2 lbs.	0 4	0 $3\frac{1}{2}$	0 $3\frac{1}{4}$	0 3	0 3	0 3
Tea, 1 oz. -	0 3	0 3	‡0 3	‡0 3	0 2	0 2
Sugar, $\frac{1}{2}$ lb. -	0 $2\frac{1}{2}$	0 $2\frac{1}{2}$	‡0 $2\frac{1}{2}$	‡0 $2\frac{1}{2}$	‡0 $2\frac{1}{2}$	0 $2\frac{1}{4}$
Bacon, $\frac{1}{4}$ lb. -	0 $1\frac{3}{4}$	0 2	0 1	0 $0\frac{3}{4}$	0 1	0 $1\frac{1}{4}$
Total -	2 $2\frac{1}{4}$	2 3	1 $9\frac{3}{4}$	2 $0\frac{1}{4}$	1 11	1 $10\frac{1}{2}$

Hence it appears that a shilling given in money, and 10*d.* (or less than 10*d.*) given in kind are of equal value. Even this equality is only when the poor choose their food with the same regard to economy and get the same purity at the shops as at the stores. In practice they are too often disposed to spend money in the fashion of prosperous times, and too often are defrauded by adulteration. Again, from the want of farthings,§ to say nothing of still smaller coins, there are constant small losses in the purchases of the poor that are avoided when the relief is given in kind.

(*c*) and (*d*). But before the income of the unemployed is available for food, it is reduced by outlay for other necessaries and for rent. Under the former head, fuel has now almost ceased to be an expense. Candles are still a charge of from 2*d.* to 4*d.* a week for a family; soap in other ways;

* This was a general shop of the class frequented by the poor, kept by a very worthy and intelligent person. That at Preston was similar.

† In all instances "bread" means best white bread, except that at Stockport it was probably "seconds" bread that was given. Seconds bread retail cost $10\frac{1}{2}$*d.* or 11*d.* for the 8 lbs. In the case of bread, sugar, &c., it might be part of the economy of the stores to wean the poor from their love of the whitest possible sort.

‡ Articles to which this mark is attached were not given from store. Retail prices are therefore attached. If the contract prices of other towns had been inserted instead, the totals of the last four columns would have been even less. In the purchase of soap and coal the disproportion between retail and contract value is, perhaps, even more considerable than in the case of food.

§ The Master of the Mint has favoured me with a very interesting statement on this subject, and informs me that he has "made an effort to press the use of farthings "in Manchester, by sending down 60*l.* worth to an active distributor, who has "several large grocery shops. He did all he could to promote their issue, both in "his own and at other shops; but after a trial of several months he was obliged to "return a balance of 15*l.* unsold."

is given by several relief committees, others leaving it to be purchased.

in rent. The question of rent will be presently considered in detail. Here the conclusion must be anticipated, that in practice a shilling a week is often expended by an average family in payment or part payment of their rent, and that this so often really is paid out of the present average income that it must be considered in estimating the amount that is available for food.

Taking therefore the very ordinary case of a man, wife, and two children whose income is made up to two shillings per head per week, their expenditure under the four heads would probably now (December) be as follows :—

	s.	*d.*	
Food (at contract value) -	5	8	an average ; varying according as relief is given more in money or in kind.
Retail profits - -	0	10	
Candles and similar necessaries.	0	6	
Rent - - -	1	0	(an amount often paid in practice)
	8	0	

Income available for food. Here it is assumed that there is no outlay on clothing or bedding, and scarcely any on fuel or soap. Hence this family of cotton operatives in an average town, under average conditions of earning and relief is in the present December getting per head per week such an amount of food as can be provided at contract prices for seventeen pence.* Nor has the amount of their income prmitted of so high an expenditure for food until quite recently. From the commencement of the distress until November scarcely more than three-quarters of the amount of food represented by these sums was procurable.

Sort of food. The nature of the diet of the operatives has of course a bearing on their nutrition scarcely inferior to the actual amount of their food. The preparation of their food is also of considerable moment.

Lancashire operatives have been used to live on a very generous diet, and doubtless experience more ill effects from a lack of animal food than if they had not been accustomed to its liberal use. They do not see in prosperous times the advantages of a careful domestic economy, and now in hard times they have no knowledge how to make the most of their scanty incomes. If their money spent in food were laid out to the best account,† and if they were able to cook the food in the most useful manner, without waste, their incomes would go a long way farther in preserving them in health.

Now-a-days the ordinary diet of the unemployed is exclusively vegetable, or they occasionally afford a bit of bacon, cheese, or butter, a herring, or rarely a morsel of cheap meat. Bread constitutes the greatest part of their daily food. Oatmeal (or meal of Indian corn less commonly) is the next most usual food, made into porridge or into various sorts of bread. To these a little butter or treacle is added, generally for the children, when they can afford it. Potatoes stand next, being happily good, cheap, and generally popular. Partly from want of utensils, partly from inexpertness, their cooking gives no variety to these materials. Tea with sugar, but usually without milk, is now the common drink. In very few families can a proper amount of milk, even if any at all, be bought for the children ; they are put on the same food as the adults at much too early an age. Animal food is now very scantily consumed, the poorest usually buying none ; but in almost all towns there are soup kitchens, where a quart of good meat soup is given for a penny, though its materials alone generally cost five farthings or more.‡ In some few towns, potato-hash (locally called lob-scouce) may be had at a penny per pint. Again, in Manchester and Salford, public dining kitchens have been lately established, where not only soup, but meals of meat

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* There is constantly another small outgoing that has not, as far as I know, been noticed by the relief committees. Many cotton workers have their children in a burial club, and are religiously paying, from their poverty, the ordinary weekly penny per head. This, of course, comes out of the balance available for food.

† An extreme instance of their ignorance in this respect is the case of a poor girl at Preston, who paid half her earnings in rent, and tried to keep herself alive on the remaining fifteen-pence a week. This might have been difficult with the best of management ; but her notions of economy were comprised in bread and tea, and death by scurvy was the result of them.

‡ The following is the receipt for soup at Bury :—Beef, 55 lbs.; peas, 49 lbs.; barley, 39 lbs.; carrots, 12 lbs.; onions, 8 lbs.; salt, 6 lbs.; pepper, 6 oz.; water, 26 gallons. Boiled by steam for 12 hours, bringing the whole quantity up to 80 gallons. In a quart of soup there are nearly 1¾ oz. of meat. The loss of a farthing on every quart of 800 gallons daily of this soup, as well as the management expenses, are defrayed by the servants of the local railway as their contribution to the relief of the distress.

and potatoes, &c. can be had for an extremely small payment. In these ways a dinner containing about two ounces of animal food can be got for the same money that in the homes of the poor would only procure a dish of potatoes or a basin of porridge.

The articles supplied as relief in kind from the stores of guardians and relief committees vary a good deal. Bread and meal is all that is given in some towns; in others, bacon, and cheese are added, or tea and sugar; potatoes are distributed in a few instances. When relief in kind is given by tickets on stated shopkeepers, the same articles are procurable, and the donors often stipulate for the kind, quality, and price of them. When tickets are presentable at any shop, the poor have to use their own discretion on these points. It is constantly asserted that they are best pleased to get their assistance in money or by tickets whose currency is the least limited. If this be so, they prefer a plan which certainly gives them no advantage, but the exercise of their own ill-disciplined choice.

Income and expenditure in various towns.

Hitherto, the amount of income of the operatives, and its availability for food or other necessaries, has been considered as an average of the cotton districts in general. It remains to state the same facts for each of the towns visited. The difficulties in doing this with accuracy are very great, from the extremely varying plans of relief in the several towns. But in the following tabular statement an approximation to exactness has been got by a careful examination of every known detail. Here are exhibited for each town the smallest and the largest ordinary income of a family of cotton workers consisting of a man, wife, and two children. The figures cannot be everywhere applied to labourers and others who are out of work, but whose distress has not come directly of the cotton failure. Such persons being in receipt of relief almost every winter are generally relieved to a total amount below the lower of these two scales.*

Total weekly Income of an average Family of a Cotton Worker—man, wife, and 2 children—in the under-mentioned Towns.—December.	Lowest prevailing Scale of Weekly Income for the poorer Class of Cotton Workers and those wholly unemployed (habitual Paupers generally getting less than this).					Highest prevailing Scale of Weekly Income for the better Class of Cotton Workers, and those at Part Work. Earnings usually supplemented to this Scale.				
	Total Income, to which Clothing, Bedding, and Firing generally added.	Would probably be spent as under.				Total Income, to which Clothing, Bedding, and Firing generally added.	Would probably be spent as under.			
		Food at Contract Prices.	Profits to Retail Dealer.*	Other Necessaries,† sometimes ƒ including Fuel.	Rent‡ or Instalment thereof.		Food at Contract Prices.	Profits to Retail Dealer.*	Other Necessaries,† sometimes ƒ including Fuel.	Rent‡ or Instalment thereof.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
Ashton - -	8 6 (7*s.* in Nov.)	6 3	1 2	0 3	0 10	9 0	6 5	1 3	0 4	1 0
Blackburn -	7 0 (5*s.* 6*d.* in Oct.)	5 2	0 9	0 3	0 10	8 0	5 8	1 0	0 4	1 0
Bolton - -	6 0	4 7	0 8	0 3	0 6	7 6	6 3	0 3	0 2	0 10
Bury - -	7 0	5 0	0 11	0 3	0 10	8 6	6 10	0 4	0 4	1 0
Chorley - -	8 0	5 5	1 1	ƒ0 8	0 10	8 0	6 3	0 6	0 3	1 0
Darwen - -	8 0	5 10	1 1	0 3	0 10	8 6	6 1	1 2	0 3	1 0
Manchester, City.	8 0	5 11	0 5	ƒ0 8	1 0	8 9	6 11	0 4	0 3	1 3
Oldham§ - -	8 0 (in Nov. 7*s.*)	5 5	1 1	ƒ0 8	0 10	10 6	7 4	1 4	ƒ0 10	1 0
Preston - -	8 6 (7*s.* in Oct.)	5 6	1 1	ƒ0 8	1 0	10 6	7 11	0 10	0 4	1 3
Salford - -	8 0	5 11	0 10	0 3	1 0	10 0	7 5	1 0	0 4	1 3
Stockport -	7 4	5 9	0 6	0 3	0 10	8 6	6 6	0 8	0 4	1 0
Wigan - -	7 0	4 8	0 10	ƒ0 8	0 10	8 8	6 9	0 9	0 4	1 0

* Under this item is seen the largest amount when the income consists wholly of money; the least amount when assistance is mostly in kind and on a store supplied by contract.

† Under the head of these necessaries is put down rather the minimum amount that it is possible to do with, than the average amount really spent on small matters in the house.

‡ In this column such a sum is placed to the account of rent as would in many cases be paid, as an instalment, by a family in receipt of the total amount indicated. Perhaps a larger number of families would pay nothing at all, while some would be paying their full rent.

§ The *allowance* for rent in Oldham, to the family in question, would be 2*s.* But as there is no reason to believe that Oldham differs materially from other towns in the amount of rent *actually paid*, it is here assumed for this town as for others that the landlord would be put off with an instalment of his rent. Only in this way is it possible to place Oldham with fairness in the list.

That income formerly was less, and distress is unequal, to be re-

The standard of income in each town has not been the same from the beginning of the distress. Almost everywhere it has been lower than its present amount. Moreover in the earlier months of the autumn, destitution was prevailing to any considerable extent in some

* See note* to page 6.

membered in comparing the several towns.

of the towns only, while others were maintaining very nearly their old prosperity. These two considerations must be allowed to have weight in any comparison between the towns. They explain, partly, if not entirely, the discrepancies which at first sight appear between the total amount available for food in the different towns and the prevalence of a low state of vitality therein. Thus, though on the table the minimum income at healthy Bolton appears so small, it is to be remembered that up to quite recent times operatives at Bolton have been earning comparatively plentiful wages, and on the other hand, when the incomes at Preston, Ashton, and Stockport (towns of lower present health) are shown so high, it is to be noted that in these places many of the mills have been closed since the earliest spring; that the organization for the relief of the poor, being in them first wanted, did not at once attain its full efficiency; that scales of income lower than the present were regarded as sufficient until the low health of the operatives forced itself to notice; and lastly, that at the outset, the cotton workers deprived themselves of the veriest necessaries of life under a sentiment of independence that in towns more recently suffering has given place to wiser counsels. In brief, the duration of the distress has had as much to do with the present low vital state of the people as the actual degree of privation.

Requisite minimum for food.

All the facts that have been ascertained point to the conclusion that low health and actual disease have resulted, and will result, from the income of the unemployed being below the standard that would procure them adequate food.* It may be positively asserted as the result of actual observation that health cannot be supported on an amount of food less than is represented by 1*s.* 6*d.* per head per week, wholesale value, or 1*s.* 9½*d.* retail value. And there is evidence to make it further highly probable that even on this scale a deterioration of health will gradually ensue. The highest of all the prevailing scales of income, namely those secured to the most favoured operatives in Oldham, Preston, and Salford is only what is quite necessary to ward off ultimate loss of health and strength. In these towns about 1*s.* 10*d.* per head per week is the sum practically available for food at contract prices, or 2*s.* 2*d.* retail prices.

B. Lodgement and clothing.

B. *The existing condition of the unemployed operatives as to lodgement and clothing.—Houses and House-rent.*—The better class of cotton workers are inhabiting the same self-contained cottages of three or four rooms that they have occupied in prosperous times. There is little disposition among them to crowd together, though often a married son or daughter comes back to the old home to save rent. Among the poorer sort of operatives many who formerly rented a two or three roomed cottage content themselves with a single room, while others take in a stranger to lodge in their families. In the poorest class two families frequently occupy a single room, one bed sufficing for the whole of each family. The actual paupers, and especially the Irish, are even worse lodged than this.

Rent.

The amount that is being paid for rent varies a good deal in different towns, and in the same town according to the means and disposition of the landlord. The owner of a single cottage is often a poor person, to whose support its rent is a material contribution. Larger owners of cottage property can usually better afford to wait for their rents, and as a rule they are bearing with great liberality serious losses on this score. Distraint is very rare, and not many cottages are to be seen empty. And although there are some instances of half-time wages being stopped in payment of rent to the extent of more than half the total earnings of a family, such cases are happily very few. On the average, probably, much less than half the usual amount of rent is being paid. But the average is of less importance for consideration than the actual sums that are in a large number of instances being demanded. The actual cost in rent to a single girl living with a family, sharing their bedroom and benefiting by their fire and lights, is from 9*d.* to 1*s.* 3*d.* a week. For a single unfurnished room in a cottage 1*s.* to 1*s.* 6*d.* would be paid. The rent of various cottages is from 1*s.* 6*d.* to 4*s.* 6*d.*, and of this one half or one third is frequently paid. For an

* The statements as to the minimum incomes of the poor have not in the above been influenced by a consideration of special instances where the income has fallen seriously below the average, such instances usually resting on the unconfirmed statements of the persons themselves. But in notes to the more detailed accounts of the several towns are mentioned cases of much severer privation than was contemplated by the local administrators of relief; and this even among cotton workers. Sometimes this has been brought about by delay of the people themselves in making their representations; sometimes by their being paupers and removeable; sometimes by much rent having been exacted out of little income.

average family the amount that is very often disbursed in rent is 1*s.* a week, either in payment for a single room, or as an instalment of the rent of their cottage.

Want of provision for rent.

Only in one town do the guardians or the relief committees make a separate provision for the rent of the people whom they are assisting. The Relief Committee of Oldham constitutes that single exception. But speaking generally, the relief committees usually regard a portion of their grant as applicable to the payment of rent, or of such instalment of rent as may satisfy cottage owners for the present. It is with this object, among others, that their scale of relief gives so much more to the first members of a family than to the children. On the other hand, the guardians usually fix the income of those relieved by them on the assumption that rent is not paid. The authorities of some unions indeed point to instructions of the Poor Law Board as forbidding them to consider the question of rent in any shape.

In the considerable number of cases where some rent is being demanded of people wholly or partially unemployed two results have followed. Either an encroachment is made on the already scanty sum that should be available for food,* or money is saved by sharing a house or room between two families.

Overcrowding.

Overcrowding of houses is distinctly on the increase among the operative class in the cotton towns. Already this may be seen to a degree fatal to cleanliness and purity of air, and equally fatal to sexual delicacy. There is even a large and increasing number of cottages that are coming into the category of common lodging houses, and in them evils are springing up of the sort that existed in such houses before their regulation by Act of Parliament. No new number of cottages, however, is being registered as common lodging houses, and the advantages of registration, in securing cleanliness and ventilation, in separating the sexes, and in preventing overcrowding, are therefore not obtained. The registered common lodging houses are, as a rule, very thinly tenanted, their ordinary charge of threepence per night being now beyond the means of their usual occupants.

Bedding.

There has been in the poorest cottages a further reason for overcrowding, besides the desire to save rent. In the bitter frosts of November the most destitute began to huddle together as closely as possible for warmth, and being sadly deficient in bedding, their day clothes often serving for their only covering by night, they carefully excluded from their crowded bedrooms every breath of air. If they rented two bedrooms they brought the beds together into one. Six or eight people would come at night into a room 12 feet square, with the window and door closed and padded, and the fire-place (as is almost universal with them) thoroughly papered up, and lie as closely as they could, for the heat of each other's bodies. They got their warmth indeed, but in a fashion that was monstrously hurtful to their health. It may be hoped, however, that a check has now been given to overcrowding, so far as it results from mere cold, by the liberal supply of bedding that has begun to be distributed in all the towns visited.

Sewing schools; ventilation of.

Sewing schools.—From a medical point of view it would hardly be possible to give too much praise to the schools that have been extemporized for the employment of cotton workers who have lost their usual occupation. Thousands of persons, but especially of young women, are provided in them with shelter and warmth throughout the day, are set to useful work, furnished with clothes and money, and kept from the mental harm of idleness. To suggest a fault in such institutions is an unwelcome duty, but there is one that in most of them challenges attention from the medical visitor. An exceeding deficiency in ventilation pervades them. These schools are generally held in the large low rooms of an empty factory or in a schoolroom intended for a less number of children. Often the original construction of neither place has provided for any sufficient change of air, ventilation without draught being scarcely possible. The girls, used to their hot mills, insist on shutting all the windows, so that the atmosphere of the sewing schools is often intolerably close. The lady superintendents often leave off work with intense headaches. The girls' faces are seen unhealthily flushed, and it is no uncommon thing for one of them to faint over her sewing. In the event of any infectious disease hanging about the person or clothes of any girl, it is easy to see that the danger of this bad ventilation would be especially great.

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* See note †, page 8.

Clothing.

Clothing.—The clothing of the operatives has been gradually disappearing since the beginning of the distress. First their Sunday dresses, then their changes of linen, have been sold or pawned, and their single suit of clothes, if not also diminished in the same way, has been worn to shreds. The poorest people were constantly without any under clothing, and a single petticoat and boddice often formed the entire wardrobe of a woman or child. In this state they were found by the early frosts of November. Their bedding was at the same time deficient. The intense prevalence of bronchitis was the consequence. Actual exposure to wet and cold, if it had been superadded, to this want of clothing, might have been expected to have caused even more lung diseases and a higher mortality from them than have here been recorded. But, in fact, such exposure has been less than usual in the present winter; there has been small necessity for women and children to leave their homes. The male cotton workers, however, who have been employed at out-door labour do appear to have suffered with especial severity from diseases produced by cold, owing to their bodies being so inadequately protected against it. Out-door labour, when employed as a test by the guardians, has sometimes been excused in the worst weather.

Since the beginning of November the relief committees of all the towns, and the guardians in some instances, have been liberally supplying the deficiency of clothing and bedding. We may trust that another frost will find the cotton workers better prepared by clothing to bear its rigour, even if they should be still further reduced by privation.

C. Cleanliness.

C. *The present state of the unemployed people and their houses in respect of cleanliness.*—As affected by the prevailing distress there is nothing to be said about the exteriors of streets and houses as to paving, scavenging, and emptying of middens. Some towns, however, are in a much better state than others in these respects, Preston (though vastly improved of late years), Blackburn, and Bolton standing somewhat badly. But in the insides of houses inhabited by the poorer classes, there is a general want of cleanliness that appears to be in part connected with their having more inhabitants, and in part due to the cost of cleansing materials. Landlords, whose weekly visits for rent are paid in vain, appear to have become careless about the wholesomeness of their houses, and few of the local authorities have acted on their powers in compelling the removal of unwholesome conditions from the interiors of cottages. Systematic sanitary inspection has not extended beyond common lodging-houses.

Domestic cleanliness has been often preserved under many incentives to its neglect; the gratuitous distribution of soap by many of the committees has doubtless tended to this result. In their persons, if the old standard of tidiness has not been possible, there has been at least less slovenliness and dirt than might have been anticipated. Among the poorest it has of course been hard to keep clothing and bedding clean when there has been no change of them, and the increased prevalence of itch in some towns cannot but be connected herewith. The guardians of the Preston union, when a dirty person comes for relief, send him off with a ticket to the nearest bath before considering his ease.

Summary of Part II.

The conclusions that have been arrived at in the second part of this report, as connected with the points observed in the first part as to the general vital state of the unemployed people may be thus recapitulated:—

1st. The amount of income of a family wholly or partially out of work varies in different towns, and has been less in almost all of them, than it is at present. It is now, in December, nearly 2*s.* per head per week in the cotton towns as a whole. Out of this amount 4½*d.* must be spent on rent and domestic necessaries. The remaining 1*s.* 7½*d.* is all that can be available for food. Of this sum 2½*d.* goes in profit to the retail dealer, while 1*s.* 5*d.* is the outlay for each person's weekly food at contract prices. Such an amount of food is not adequate to preserve health and strength through a lengthened period.

2nd. In three towns the most favoured operatives are now relieved on a scale which allows of their procuring food to the value of 1*s.* 10½*d.* (contract price) per head per week. This is equivalent to 2*s.* 2½*d.* or more, expended in procuring the same food at a retail shop. It is desirable that a scale so high as this should not be the exception, but the rule. No lower minimum standard can be considered adequate to

maintain health and strength. Strong confirmation of this view may be got from examining the dietary of an average in-door pauper of a workhouse. In the Salford union, for instance (which relieves its out-door poor with 1*s.* 6*d.* per head per week), every man, woman, and child in the workhouse costs 2*s.* 1*d.* weekly for food alone at contract prices. Making $2\frac{1}{2}d.$ deduction from this for extra dietaries of the sick, the remainder would be the exact sum here regarded as the minimum for health in the distressed operatives.*

3rd. Relief given as food is preferable to relief given as money or by tickets on unspecified shops,† as saving loss in change and by adulteration, preventing waste by the poor, and enabling the donors to apply to the selection of food the best medical advice attainable. Cooked food, as part of relief in kind, offers some peculiar advantages.

4th. Clothing, bedding, and firing have been seriously deficient, and their want has contributed to disease. They are now being pretty universally supplied to the poor, in addition to the foregoing scale of income.

5th. Rent is often being paid out of amounts that ought to be available for food. It is desirable that this should be prevented, and that means should be contrived for otherwise satisfying or postponing the claims that are made for rent on the unemployed. A further reason for anxious attention to the question of rent is, that overcrowding is seriously prevalent, and will be the fruitful source of disease and immorality if it should increase. To reconcile the urgent claims of the poorer cottage owners with the conditions imposed by the poverty of their tenants is a problem difficult of practical solution; but it is not one that will baffle the powers of Lancashire gentlemen if it be taken into full and direct consideration.

6th. The interiors of cottages are frequently dirty and the rooms overcrowded. There has been no efficient inspection as to these points under the Nuisances Removal Act. Numbers of tenements are becoming common lodging-houses without being registered.

7th. The sewing schools and kindred institutions are of great value to the health of the unemployed population. Their ventilation, however, is in serious want of improvement.

8th. Personal cleanliness would be enhanced by providing for each person two suits of such clothes as can be washed. Tickets on a bath, given in Preston, offer an example worthy of imitation.

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* "Necessaries" (soap, candles, firing,) in this workhouse cost $3\frac{1}{4}d.$ per head per week, or something more than (including coals) has been reckoned to their account in the text.

† Retail shopkeepers are of course injured, *pro tanto*, as the relief of a town is given in kind. They are in the habit of complaining at this, and of saying that they, too, must come on the charitable funds if their usual customers are supplied from the committee's stores. This appears true, and much to be regretted; but it may fairly be remembered that even when relief is given wholly in money, these shopkeepers are not very indirectly partakers in the charitable aid, inasmuch as the incomes of the operatives have to be made up to a larger amount in order to admit of retail profits. Too much weight must not, therefore be attached to this complaint, if it be true that there is a positive economy and advantage to the community by the plan of relief in kind.

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Report by Dr. Buchanan on an Outbreak of Yellow Fever at Swansea.

Yellow fever at Swansea.

I have the honour to report, that immediately upon the receipt of instructions on September 27th I set off for Swansea, and found that numerous cases of yellow fever had occurred, apparently in connexion with the Hecla, a vessel that had arrived from Cuba on September 9th. I was obliged to return to London on the morning of September 29th; but the inquiry proving extensive and important, I returned to Swansea on the night of September 30th, and continued the investigation till October 5th. From that date I have been enabled, by correspondence with medical men and others at Swansea, to bring the facts down to the date of the present Report (October 23d, 1865), when the fever appears to be completely at an end. To my account of the outbreak of yellow fever in Swansea I have thought right to prefix certain particulars as to the general sanitary circumstances of the town.

§ I.

Sanitary circumstances of the town.

The town and port of Swansea in South Wales is in latitude 51° 37′ north, and in 3° 55′ west longitude. Some of the higher parts of the town distant from the port are on the coal measures, which form the main part of the county of Glamorganshire, and line the bay; but the greater part of the town is situated on a porous alluvium at the mouth of the river Tawe which runs from north to south into Swansea Bay. Just before entering the harbour the river divides into two parts, including a small long island between them, of which mention will frequently be made. The river separates the town on the west from the hamlet of St. Thomas, a rapidly growing suburb, on the east. The west branch of the river between the island and the town of Swansea is formed into the North Dock by a lock at each end. The alluvial island and some inhabited portions of both river banks have only a few feet of elevation above high-water mark.

Topography.

Size.

The municipal borough of Swansea includes a population nearly half as large again as that of the town proper. The borough population was, in 1841, 22,982; in 1851, 31,461; and in 1861, 42,581.

Trade.

Swansea is the principal seat of the copper trade of Great Britain, importing copper ore from various parts of the United Kingdom, and very largely from Cuba and Chili. There are extensive smelting works to the north of the town and they employ large numbers of men. Ironworks, potteries, patent fuel works, and shipbuilding also give abundant occupation to the rapidly growing population. And the exporting of coal and other minerals and of manufactured produce is another important part of the trade of the port. There is no present lack of employment nor any exceptional destitution in the town.

Government.

The local government of Swansea is in the hands of a mayor and corporation, who are the local board of health. Certain functions relating to the shipping of the port are vested in the harbour trustees, the customs officers, and the coast guard.

House accommodation.

The town is not very closely built on, except on the west side of the North Dock, where there are a good many small ill-ventilated courts. The houses of the labouring class are far from being of the worst sort, and they are not as over-crowded as is common in large seaport towns. Their worst sanitary defects consist in their sometimes low and confined situation, and in the absence of sufficient outside conveniences. There are 17 registered common lodging-houses in Swansea, and about an equal number into which tramps are occasionally received illegally.*

Sewerage and house drainage.

The lower part of the town is all supplied with public sewers, but the houses of this part do not all use them, many of them still having cesspools. The sewerage of the upper part of the town has not yet been carried out. The main sewer of the town enters the harbour between the entrances to the North and South Docks. The outfall for the sewerage of the hamlet of St. Thomas, and also the outfall for the small sewer that drains the island, are into the east branch of the river just above its entrance into the harbour. All the outfalls are below high-water but above low-water mark. The sewer from the island receives in the main only surface water and slops. All the privies but one on the island discharge into cesspools. The gullies are all trapped, and charcoal boxes are fitted to the ventilating holes.

North Dock.

No sewage has entered the North Dock for the last four years. There is a constant movement of water of small extent in the North Dock, flowing out as vessels are "locked" in passing between the harbour and dock, and entering by the Swansea Canal at the head of the docks. When the canal supply fails to keep the water to a sufficient level in the North Dock, there is an arrangement for pumping sea water into it from the South half-tide basin.

Water supply.

The water supply of Swansea is from reservoirs some distance off the town, which are fed by streams and springs. The water is very good in quality, free from organic contamination, and supplied on the

* The sanitary inspector finds difficulty in getting a conviction from the magistrates for taking lodgers into an unregistered house, inasmuch as the magistrates require evidence that the lodgers are different people, from one night to the other, before they consent to regard the house as a common lodging-house. And this evidence they insist on, even though it is admitted that members of several families occupy a single room.

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continuous system at the rate of some 30 gallons per head per day, but from this estimate a considerable deduction must be made for the water used by the railways and manufactories. Measures are at present being taken for an increased supply of very pure water.

Paving. Many thoroughfares* and private courts in Swansea are extremely defective in their paving, and as a consequence are either muddy or dusty, as the weather goes, but always dirty.

Copper smoke. It is impossible not to mention the "copper smoke" of Swansea among the conditions that would be expected to affect health. But any effect that it may have in this way is stated to be small, and to be obscured by other influences.

Ordinary death-rate. The ordinary rate of mortality in the registration district of Swansea and Gower was 20·23 per 1,000 in the 10 years 1851–60. But in the town of Swansea proper the death-rate is more considerable than this, reaching to 23 or 24 per 1,000.

Prevalence of chief diseases. The prevalence of the principal causes of death for the registration district is shown in the following table from the Parliamentary Return No. 12, Session 1863, where the corresponding numbers for England and Wales are added for the sake of comparison, but as regards the town proper similar statistical information for recent years cannot be given.

Deaths per 100,000 of each class referred to.

Class.	Cause of Death.	Swansea and Gower.	England and Wales.
Both sexes: All ages	All causes	2,023	2,217
	Fevers	94	91
	Diarrhœa, dysentery, and cholera	52	108
	Scarlatina	82	88
	Diphtheria	7	11
Under 1 year	All causes	13,506	17,731
At less than 5 years of age	All causes	5,809	6,760
	Diarrhœa, dysentery, and cholera	223	526
	Lung diseases (without phthisis)	935	1,040
	Brain diseases (with hydrocephalus)	1,594	1,337
	Teething	99	163
	Small-pox	210	103
	Scarlatina	448	419
	Measles	225	280
	Whooping cough	332	362
Ages between 15–55. Males	Phthisis	405	370
Females	„	423	403
Males	Other lung diseases	148	119
Females	„	115	84
35–55 Males	Brain diseases	142	153
Females	„	93	122

An excess of phthisis and lung disease in the adult, of small-pox and of brain diseases (probably convulsions) in children, with a fever rate as high as the needlessly high rate of England, are the only unfavourable points, among many favourable ones, that are to be gathered from this table. Probably some of these causes are just those which operate more in the town than in the country parts of the district to raise the mortality.

Ordinary continued fever, The prevailing type of continued fever of Swansea is typhoid with rose spots. True typhus is of very rare occurrence. Fever is stated not to be especially prevalent in the low-lying parts about the docks. There has been no exceptional amount of fever in the present year, perhaps even less than usual, and none of any consequence in the vicinity of the docks. There has been no relapsing fever for a great many years. One case that occurred a year ago, described to me by a physician in Swansea as a possible example of this disease, was out of all question a case of typhoid.

and other fevers. In 1863–4 there was a serious epidemic of scarlatina in Swansea, and diphtheria was also very prevalent. Last winter measles was epidemic, but not very fatal. Diphtheria is stated to be now present.

Intermittents. As to intermittents, most of the medical men agree that they are of very rare occurrence, but Dr. Paddon has found brow ague common in his practice, which does not lie, however, in the lowest parts of the town.

* The bad paving is a very widely spread evil throughout the town, and nothing can be more desirable for health than that it should be made good. But most of the places where the paving is bad are technically private streets. The surveyor has recommended that many such streets should be adopted by the board of health. But the town clerk points out that they ought to be paved, channelled, and properly laid out by their owners before the board adopts them. The town clerk also is said to hold that the owner of a private court cannot be compelled to pave it, unless a nuisance is proved.

Previous yellow fever in Swansea.

None of the practitioners of Swansea have ever seen yellow fever in the town before the present outbreak. Some of them remember cases convalescing from yellow fever having been brought into the port, but they never knew the disease to extend to a resident in the town. Dr. Padley has not unfrequently seen persons suffering from the remittent fever of the West Indies, usually convalescent on their arrival, but sometimes having the fever with remissions afterwards. They usually recover, and have not been known to communicate the disease.

It is not, however, so certain that yellow fever has never before appeared at Swansea, among persons employed on infected Cuban ships on their arrival. Mr. W. Rosser, keeper of the light and meteorological registrar, has furnished me with the following information, dated 20th October 1865, respecting instances of yellow fever suspected to have occurred at the port previous to the outbreak of the present year.*

The first positive case of yellow fever which I can certify is as follows: Benjamin Davies, pilot of this port, piloted a brig called Alderman Pirie, which arrived here from Cuba with a cargo of copper ore (some of the crew having died on the passage home of yellow fever). He boarded her on the 26th July 1843 in the Channel, remained on board that day at the Mumbles Roads, entered the harbour on the following day, 27th, repaired to his home as soon as the ship was moored, complained of violent pain in his head, and died the following day, 28th, exhibiting all the symptoms of yellow fever. This information I obtained yesterday from the widow of the deceased.

The second case. The Henrietta barque arrived into this port from Cuba with copper ore in the month of August 1851. William Gammon, a respectable sailor, was employed to go on board the Henrietta as shipkeeper. He was (while on board) taken ill, went home on the 25th of the above month, and the following day, 26th, was a corpse, of unmistakeable yellow fever. Upon his first been taken ill, his brother, Benjamin Gammon (also a sailor), not knowing the complaint in its first stages, went on board the same vessel to retain the situation for his relative. He was almost immediately taken ill in the same way as his brother William, but having obtained the prompt services of three of the medical gentlemen, as well as that of an old captain, he providentially recovered, from whom, and also the widow of the deceased, I obtained the foregoing particulars on the past day.

Third case. In July 1864, Samuel Dawkin, a shipkeeper, went on board the barque Mangosteen which came from Cuba, to act in that capacity (fever having been on board previous to her arrival). He was suddenly taken ill, and on the third day a corpse, and in the opinion of his brother, David Dawkin, to whom I am indebted for the facts, it was a confirmed case of yellow fever. The cases I have thus furnished you with were all known to myself at the time of their occurrence, as I was well acquainted almost daily with the deceased men and their habits. I believe you will consider them to be fully authenticated.

Previous yellow fever in crews of vessels coming to Swansea.

Respecting the occurrence of yellow fever, of late years, among the crews of Cuban ships arriving at Swansea, the following facts were obtained from a book kept to show the "receipt of wages and effects of deceased seamen." Of vessels arriving in 1862 the San Jose lost two of her crew from yellow fever at Cuba; the Florence one; the Cornwall lost ten of her crew from the same disease, five at Cuba and five at sea; the Ellen lost eight of her crew from it, seven at Havannah, and one on her passage home; the Hampshire lost one at Cuba of the same fever; the Mangosteen lost one man from "fever" at Cuba; the Countess of Bective lost five of her men from yellow fever, and one from brain fever at Cuba; and the Dorsetshire and Cobrero each lost four from yellow fever at Cuba. Of ships arriving in 1863, the Florence and Stains Castle had each lost one man at Cuba of yellow fever; the Cornwall had lost three, one at Cuba, and two on her way home, from the same disease; the San Jose had lost one at Cuba. Of ships arriving in 1864, the Dorsetshire had lost two men from yellow fever at Cuba; the Mangosteen had lost one at sea from "fever;" the Pedro Ferrer one at Cuba from yellow fever.

Of 24 Cuban vessels that have discharged their crews at Swansea in the present year three only have lost part of their crew from yellow fever; the Augusta Schneider one; the Victoria two on the voyage; and now the Hecla.

As to cases of yellow fever that recovered, similar information was not so easily accessible.

Meteorology.

I am indebted to Mr. W. Rosser for the meteorological tables placed in the Supplement, which show how remarkably the present season differed from its predecessors at Swansea, especially its very high temperature and want of rain. Reference will hereafter be made to these tables, to show how the atmospheric conditions of Swansea altered in the second week of the present October.

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* An opinion of Dr. Paddon, although it is not extensively shared by other practitioners in Swansea, deserves to be recorded here. It is that after a vessel has arrived from Cuba with sick persons who have afterward died on shore (though he cannot be sure that the imported disease was yellow fever) a special malignity has been observable in the common gastric fever of the town, the gastric symptoms proper being more intense, and delirium coming on earlier than in ordinary times, with a greater tendency to nervous collapse. This has occurred to Dr. Paddon to notice on three or four occasions, the mortality of fever at such times being raised to 30 per cent. of the attacks in the adult.

§ II.

Circumstances of arrival of Hecla.

On Friday, September 8, the Hecla barque, a wooden sailing vessel, William Clouston master, returning from Cuba to Swansea with copper ore, was boarded at 5 p.m. by George Morgan, a Swansea pilot, 15 miles to N.E. of Lundy Island [and therefore about 25 miles off Swansea]. He found her in charge of a Bristol Channel pilot, who gave up charge, and returned to his own boat. The master informed Morgan that he had a man on board sick of dropsy, that he had lost three of his crew on the voyage home, was in consequence short-handed, and desired Morgan to send his boat ashore for four or five men to assist him in coming in. This he accordingly did, and five men came off. The vessel reached the Mumbles roadstead, came to anchor there about 9 p.m., and showed a light through the night. At daylight on Saturday September 9 the ensign was hoisted, and the ship's number shown. The steam tug came up about 6 a.m., and towed the Hecla in, in the ordinary course. Not a word was said to the pilot about yellow fever, and he had no idea that the men died of that disease. The last vessel that had arrived from Cuba, less than a fortnight before, had had no sickness on board, and the pilot had no reason, particularly as the Hecla had a clean bill of health, to believe that the sickness on board was of an infectious character.*

September 9.

The Hecla entered Swansea Harbour at 9 a.m. on September 9, showing no quarantine flag, and giving no indication that sickness was on board.† She was placed in the North Dock, alongside the Cobre Wharf, in the usual discharging berth.‡ A good many people went on board her as she entered the dock.§ Within an hour of the ship's arrival, two passengers were landed with their luggage, and the crew had left the ship, and had distributed themselves over the town. Three men were landed sick; two of whom were recovering from "fever;" one the captain reported ill of dropsy. Within three hours of the vessels arrival in port the hatches were removed, a stage rigged, and gangs of men commenced discharging the cargo.‡ About noon the sanitary inspector came to the mayor, told him of the arrival of the Hecla, and stated to him that deaths were reported to have occurred on the vessel in her homeward passage, and that one seaman had been landed from the ship seriously ill. The mayor, J. Clarke Richardson, Esq., went at once to the collector of customs and to the master of the Hecla, and learnt that the rumour about sickness on board was true, that some of the deaths had been from yellow fever, and that the sick seaman was suspected to be suffering under the same disease. Thereupon the mayor requested Dr. Paddon to accompany him, and they went together to Welcome Court, where the man, James Saunders, who had been removed from the Hecla, lay sick.‖ He had before been visited by two medical men (Messrs. Harrington¶ and Thomas), who had certified the case to be one of yellow fever. This was the man who was stated by the captain to be ill of dropsy. Dr. Paddon found him lying in bed, in a wretched room of a small dirty house, dying of exhaustion from fever, without any sign of dropsy; his body tinged yellow.** He was so near death that no detailed examination could be made. The mayor and Dr. Paddon had scarcely left the house when the people ran after them, to say that Saunders was dead.‖ Dr. Paddon thereupon certified that he died of "fever, probably yellow fever."

First precautions.

At this time, soon after noon on September 9, a good deal of public anxiety existed about the Hecla, and about the possibility of disease spreading from the house in Welcome Court or from the crew. Under Dr. Paddon's advice, the mayor caused the following precautions to be taken:—The body of Saunders was put into a tarred sheet, and buried within four hours of his death; the house where he died was immediately emptied, and disinfected with limewash and chloride of lime; and for further safety all the houses in the court were similarly treated. The bedding and clothing of the dead man were destroyed, and the house was again cleansed and disinfected before it was allowed to be tenanted, a week after. The mayor also set the police to find out the passengers and crew of the Hecla, and sent the sanitary inspector, in company with Mr. Evans,†† to have their clothes and rooms and persons fumigated with chlorine.‡‡

But the mayor and Dr. Paddon were further desirous of dealing with the Hecla herself, on the supposition that she might be a source of

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* Evidence of pilot to Mr. Cullum, officer of customs appointed to inquire as to breach of quarantine by the master and others of the Hecla.

† Evidence of Custom House officer to Mr. Cullum.

‡ Dr. Paddon to the Board of Trade.

§ Statement to self by Norman; Case I.

‖ Statement of mayor to self.

¶ Mr. Harrington was acquainted with yellow fever, having seen it abroad.

** Dr. Paddon to the Board of Trade.

†† Mr. Evans is lecturer on chemistry at the Normal College at Swansea, and is connected with the corporation as gas examiner.

‡‡ Statements of mayor and Dr. Paddon.

infection. The mayor therefore convened a meeting of magistrates, to consider whether there was any power to remove the vessel from the dock, and if so, whether the sailors who had left the ship could be compelled, under their articles, to take her out.* The customs authorities and the board of health were also applied to. All agreed that the vessel ought never to have come into the port, but having entered and partly discharged her cargo all the authorities found themselves powerless to insist on her removal.† The agents for the owners of the ship and cargo were communicated with, but they at first refused to allow either ship or cargo to be meddled with, arguing that other ships had come into Swansea having had yellow fever on board in their homeward passage, that they had never been interfered with, and that no ill results from them had occurred to inhabitants of the town.‡ After consultation with other authorities of the town then, the mayor did all that he could do, and on the afternoon of the same day, September 9, set the police to turn people off the vessel, and keep everybody from going on board her The unloading was stopped, and the hatches shut down, but not before some 30 tons of ore had been taken out and placed in the Cobre yard.§ Measures of purifying the ship were now had recourse to; these continued until Tuesday the 12th September, and consisted in washing the decks and forecastle with solution of chloride of lime, and in the copious evolution of chlorine in the forecastle, steerage, hold, and places of storage. Norman, one of the persons whose cases are recorded hereafter, noticed when he was on the ship on the 9th, before any chemicals were used, that a very bad smell came up from the forecastle, where the sick people had been; and on Monday the 11th Dr. Paddon observed even the scupper holes filled with what appeared to be excrement, and had them especially cleaned out. The fumigation of the ship was finished on the 12th; the police were then removed, and communication with the vessel permitted. On the morning of the 13th she began to discharge her cargo, and finished unloading on the 20th or 21st of September, lying all the time alongside the Cobre company's yard into which her ore was taken. The agent for the Cobre company had this ore sprinkled with Burnett's fluid.

History of Heela's voyage.

On the afternoon of the day when the Heela arrived, as soon as action had been taken, inquiry into the history of the vessel and into the circumstances of her arrival was more accurately made. At about 3 p.m. the collector of customs instructed the examining officer to put to the master the usual quarantine questions. It must be premised that the master had been guilty of an infraction of the quarantine laws, and that his answers were defensive in character, and were not always consistent with themselves. From them it appears that the Heela left Swansea on May 1, and touched at no place until she arrived at Cuba; that she left Cuba on the 26th of July with a clean bill of health, again touching at no place in the homeward voyage. The master's answers further state that he was not aware of any infectious disease prevailing in any degree at the place from which he sailed, but that he heard reports of sickness at Cuba. He states that two mariners died at Cuba. [In a subsequent examination by Mr. Cullum, of the customs, the master stated that before sailing from Cuba several cases of sickness occurred, and on July 21 George Wilson died in the hospital on shore, and Hansel Pedersen was left in the hospital sick.] The master's answers continue that he has four officers, ten mariners, and two passengers on board [they had, however, dispersed at the time the examination was taken], and that in the course of his homeward voyage he lost three of those on board, viz., on August 11, one man 16 days sick; on August 24, a second, three days sick; and on September 1, a third, 42 days sick. The bedding and pillows of these men were thrown overboard. [The master's statement to Mr. Cullum, and the log of the vessel, show that the first man was John Thompson, who joined on July 21, five days before the vessel left Cuba, where he was one day out of hospital. The second man was William Douglas, the third David Richards.] Saunders, who died on the day of arrival at Swansea, had been 14 days sick. Of the six deaths, two had been from yellow fever, two from intermittent. [In his statement to Mr. Cullum the master says he considered Saunders was suffering from dropsy. In the book of "receipts of wages and effects of deceased seamen" the cause of death of each of the six men is entered as "yellow fever."]. Among other answers to the quarantine

* Statement of mayor to self.

† Dr. Paddon to the Board of Trade.

‡ Dr. Paddon to the Board of Trade and to myself. The agent of the Cobre Mining Company, in a letter explanatory of what he said on this occasion, states, respecting the arrival of vessels from St. Jago de Cuba with yellow fever on board, that his experience in direct communication with such vessels extends over a period of 18 years, and during such time he has never known any ill results arising from the landing of these crews in this port. He further remarks, that a regular trade between Swansea and St. Jago de Cuba has been carried on for 30 years, without any alarm or injury to the inhabitants of this town and port.

§ Statements of mayor, Dr. Paddon, and Norman (Case I.)

questions, the master stated that all except the cases now mentioned had been well during both voyages and at Cuba. [In his subsequent statement to Mr. Cullum, however, he says that several cases of sickness occurred before sailing from Cuba, and that during the passage home several of the crew, besides those who died, were sick.]

"Quarantine," so called, and action of authorities.

These answers having been obtained from the master, the collector of customs forwarded them on September 9th to the Commissioners of Customs in London, and stated that "he had put the vessel in "quarantine." On being questioned by myself on October 3, as to what this statement signified, inasmuch as the crew were already dispersed, and the vessel partly unloaded, the collector said that he meant that he had the quarantine questions put, and that the mayor had prevented communication with the ship, and had had her hatches shut; but that the customs authorities had adopted no preventive measures.

Dr. Paddon was desirous, on September 9, that the Board of Trade should be at once acquainted with the circumstances by telegraph, and their instructions asked. Finding this was not done, he wrote on the 11th September, to the President of the Board of Trade, a letter from which the chief points have already been extracted here.

On September 15 the Board of Customs instructed Mr. Cullum, their collector at Newport, to proceed without delay to Swansea, and to institute a full inquiry into all the circumstances connected with the Hecla. The chief points elicited in this inquiry have also been already here stated.

The observations of the Board of Customs upon Mr. Cullum's report are, "that there has been great irregularity and neglect of the "usual precautions on the part of all persons on board, and that the "master, the Swansea pilot, as well as the Bristol pilot, and the crew "who landed from the vessel have in strictness rendered themselves "liable to prosecution under the quarantine laws. They would, how-"ever, appear to have acted in ignorance and not from any wilful "intention of violating the law." This opinion having been communicated to the Privy Council, the Customs authorities were informed that the parties implicated must be warned of their liability to prosecution, but that under the circumstances no prosecution would take place.

No previous importation of yellow fever, lately.

Mention has already been made of other ships coming from Cuba which had lost some of their crew from yellow fever. It appeared right, before connecting the Hecla with the deaths that occurred after her arrival, to make quite sure that no other vessel of those recently arrived at Swansea from an American or West Indian port had had any similar sickness even not fatal on board. The Registrar General of Seamen has kindly furnished extracts from the logs of all vessels so arriving in the two preceding months, which are quite free from any mention of fever. So that certainly no other ship can be connected with the outbreak.

After Saunders's interment, and after the precautions before described had been taken, no further alarm appears to have been felt about yellow fever. The Hecla some days after unloading, was transferred from her place by the Cobre Wharf into the Beaufort Dock, a branch of the North Dock, surrounded by high warehouses. But on Sept. 23, the registrar of births and deaths in Swansea, got a medical certificate that a death had occurred from yellow fever, and heard it reported that other cases were about the town. That letter, transmitted by the Registrar General of births and deaths to the Council Office, was the immediate cause of the present inquiry being set on foot.

§ III.

Outbreak among inhabitants of Swansea.

Since the arrival of the Hecla cases of true yellow fever have occurred among residents in Swansea. The character and sequence of the attacks were only made out by degrees: each is related separately with as much accuracy as possible in the supplement. The following is a tabulated abstract of the facts as they were at last ascertained, arranged as far as may be in the order of their occurrence:

Abstract of Cases of Yellow Fever in Swansea. Doubtful Cases in Italics.

—	Date of Attack.	Place of Work.	Name.	Residence.	Date of Death.	Date of Convalescence.	Supposed Source of Infection.
	At sea	Hecla	James Saunders	Welcome Court	Sept. 9	—	Ship Hecla.
	Sept. 15	North Dock	— Norman	Clifton Row	—	Oct. 1	Work among shipping in North Dock. Having been on Hecla on September 9.
	Sept. 17	East quay of North Dock	David Bowen	3, Fynone Street	Sept. 22	—	Patrolling by side of Hecla, and probably on board her.
	Sept. 18	Ferryside	Margaret Brown	Ferryside	Sept. 22	—	Residence on island.
1	Sept. 18	Cobre Yard	Margaret Williams	Cobre Yard (Lay ill at Gower Place.)	—	Oct. 1	Residence on island.
2	*Sept. 23*	*Cobre Yard*	*Miss Trestrail*	*Cobre Yard*	—	*Sept.* 28	*Residence on island.*
1	Sept. 18	Richardson's ship yard	John Jesse	9, Greenfield Street	Sept. 22	—	Work on island. Having been on Hecla, September 9.
2	Sept. 22	Richardson's ship yard	Sarah Wilson	Richardson's ship yard (Lay ill at Mansell Street.)	Sept. 25	—	Residence on island. Husband on Hecla, 2 *or* 3 times.
3	*Sept. 25*	*Richardson's ship yard*	*Mary Ann Wilson*	*Richardson's ship yard*	—	*Oct.* 3	*Residence on island. Father on Hecla, 2 or 3 times.*
4	*Sept. 25*	*Richardson's ship yard*	*Mr. Wilson*	*Richardson's ship yard*	—	*Oct.* 1	*Residence on island. Having been on Hecla, 2 or 3 times.*
5	Sept. 26	Richardson's ship yard	William Thomas	Sketty	Sept. 29	—	Work on island.
6	Oct 3	*Richardson's ship yard	James Lilley	Clifton Hill	—	Oct. 13	Work on island.
	Sept. 19	Smithy on island	John Colwell	5, Lower Rodney Street	Sept. 24	—	Work on island.
1	Sept. 20	Bath's Yard	Elizabeth Davies	Bath's Yard	Sept. 26	—	Residence on island.
2	Sept. 21	Bath's Yard	Elizabeth Harris	Bath's Yard	Sept. 27	—	Residence on island.
3	Sept. 25	Bath's Yard	— Jones	5, Lower Rodney Street	—	Sept. 29	Work on island September 14–15. Residence with Colwell.
4	Oct. 1	Bath's Yard	John Wilkins	Bethesda Terrace	Oct. 10	—	Work on island (assaying Hecla ore).
1	Sept. 20	8, Cobre Row	Jane Mahoney	8, Cobre Row	Sept. 27	—	Residence on island. Husband on Hecla, September 9.
2	Sept. 22	8, Cobre Row	Hannah Mahoney	8, Cobre Row	—	Oct. 5	Residence on island. Father on Hecla, September 9.
3	Sept. 24	*Richardson's ship yard	William Mahoney	8, Cobre Row	Sept. 27	—	Residence and work on island. Father on Hecla, Sept. 9.
4	*Sept. 30*	*8, Cobre Row*	*Jane Mahoney, jun.*	*8, Cobre Row*	—	*Oct.* 5	*Residence on island. Connexion with previous cases.*
5	*Oct. 3*	*8, Cobre Row*	*Susan Mahoney*	*8, Cobre Row*	—	*Oct.* 8	*Residence on island. Connexion with previous cases.*
1	Sept. 20	Pelican Inn, Strand	James Hickey	Pelican Inn, Strand	—	Sept. 27	Communication with Saunders. House adjacent to Welcome Court, and about 150 yards from Hecla. Hickey and wife were only cases which could not be traced to residence or occupation on the island.
2	Sept. 22	Pelican Inn, Strand	Elizabeth J. Hickey	Pelican Inn, Strand	Sept. 26	—	Same as husband; but no direct communication with Saunders.
	Sept. 21	*About town*	*Dr. Griffith, M. B.*	*Dynevor Terrace*	—	*Sept.* 30	*Had not been on island or at docks. Visited a case of yellow fever (Bowen) first on 19th September.*
1	*Sept. 23*	*Eleanor sloop*	*Charles Hayes*	*Eleanor sloop*	*Sept.* 25	—	The Eleanor sloop lay close to the Hecla in the North Dock, September 16–18. Then sailed for Llanelly, where the deaths occurred.
2	Sept. 26	Eleanor sloop	John Slocum	Eleanor sloop (Died on shore at Llanelly.)	Sept. 30	—	
3	*Oct. 2*	Eleanor sloop	Daniel Stapleton	Eleanor Sloop (Lay ill at Frampton-on-Severn.)	—	End of Oct.	
1	Sept. 29	Top of Cobre Row	Rachel Williams	Top of Cobre Row	Oct. 1	—	Residence on island. Husband on Hecla. Saw corpse of Mr. Brown.
2	Oct. 4	Richardson's copper yard	Nathaniel Williams	Top of Cobre Row (Lay ill at Powell Street.)	Oct. 5	—	Residence on island. Having been on Hecla once between 10th and 17th September.

Let it be recalled that in the present summer, and at the time of this outbreak, there had been extremely little fever of any sort in Swansea. What did exist was ordinary typhoid, and there were no cases of this on the island. There was not, and there had not been for many years, any instance of relapsing fever.

The table shows that between September 15, when the first case occurred, to October 13, when the last case became convalescent, there were 22 cases in which the diagnosis of yellow fever could pretty certainly be made, and seven other cases in which the circumstances of exposure or the character of the attack led to a more or less strong suspicion that the illness was of the same nature.

Of the cases diagnosed yellow fever 15 died, besides the man brought by the Hecla, and seven recovered. Of the doubtful cases one died, and six recovered.

Nature of disease.

Of the nature of the disease I am able to assert, with the assent, I believe, of the whole of the medical profession in Swansea, the three following propositions, which I give in the order in which they were successively established:—1. That it has been no ordinary English fever; 2. That it has not been the relapsing fever, which in certain epidemics has been observed to present varieties simulating tropical yellow fever; 3. That it is bonâ fide the West Indian yellow fever itself. The records of a case, which differed in no essential respect from most other fatal cases, and which is chosen for quotation here because one day's note contains all essential points, will exhibit something of the evidence on which these propositions are based.

Record of a typical case.

Rachel Williams, aged 35, married, living on the island at the top of Cobre Row. Ailing in no definite way for a week before 27th September, when she was seized with diarrhœa and vomiting, but on 28th was well enough to go to church in the evening. On the morning of 29th had rigor and intense frontal headache, and when seen by Mr. Andrew Davies at $10\frac{1}{2}$ a.m. had violent pain in loins and along spine, eyes suffused and face flushed, great general heat of skin; no jaundice; pulse 132. Ordered calomel and James's powder every four hours, with cold to head. Seen again at 10 p.m., when a slight improvement was noted.—September 30th, 10 a.m. Less pain in head and back, pulse 118, temperature much less, no vomiting or epigastric pain; two stools; plenty of natural looking urine.—October 1. Vomited four times in night between three and five a.m.; everything vomited was black; light brown stool last night. Seen by Mr. Davies and myself at two p.m. Face pale, lips bluish; peculiar frown; no wandering or coma. Says "she feels better." Skin cool; sweating, feet cold; temperature in axilla 98·4°; trace of yellowness in conjunctivæ; no œdema of feet; pulse 94, very small and soft; tongue dryish black; frequent efforts to vomit; vomita copious black, a black powder suspended in a somewhat glairy-looking liquid; no tympanitis; epigastrium very tender; two stools to-day; one seen is semi-solid, mixed black and grey, mottled. No urine passed to-day, unless a teaspoonful of pale fluid with the stool be urine. The black vomit was strongly acid, and when microscopically examined was found to consist (A) of blood corpuscles, (a) unchanged, red and white, (b) small and shrunken, (c) disintegrated, (d) massed into large yellow irregular lumps, in which separate shrunken corpuciles were sometimes recognizable, (B) of epithelium, (a) squamous, (b) columnar, (c) spheroidal, (d) free nuclei. The vomit when filtered yields a liquid almost colourless, and having none of the reactions of bile. On the same day, October 1, at 5 p.m., delirium began, and when seen by Mr. Davies at six p.m. she was insensible, with trismus and general rigidity of the muscles. Skin cold, but not blue; frequent vomiting of same black fluid; pulseless at wrist; no urine. Died at 6·50 in same state. When her body was seen next day, was very yellow, with streaks of blue in the face, and the hands and finger nails blue. I pressed hard for an autopsy, but her husband would not permit it.

Black vomit.

Sources of possible infection, in this case.

This woman and her husband lived by themselves in a tidy house on the island at the entrance to Richardson's copper ore yard, which adjoins the Cobre Company's yard. In a straight line, the house would be about 130 yards from the place where the Hecla unloaded, and nearer still to the spot where her ore was deposited. The patient's husband (whose case is given in the supplement) was on board the Hecla once between the 10th and 17th of September. She herself had not been on the vessel, but "had passed her in going to town, as hundreds of other people did." None of the crew, nor any of their goods, had been to the house, nor has she met with any of them. Mrs. Williams went on the 23d September (four days before her first vomiting, and six before her definite headache,) to see the dead body of her neighbour, Mrs. Brown, whose case is also recorded in the supplement. She was not then alarmed about the fever, but afterwards got very fearful of it.

The patient was seen during life by several medical men, who stated that the fatal cases which they had themselves recently attended exhibited nearly identical characters. It is also well to mention, as having influenced public opinion at Swansea quite as much as the assurances of the doctors, that a Cuban gentleman, Don Pedro Ferrer Landa, saw the body of Mrs. Williams after death, as well as another case which afterwards recovered, and that he recognised the precise appearances which to a practised non-medical eye are most striking in the progress of yellow fever, and after death from it. He had previously been as incredulous as the doctors themselves at first were as to the possibility of yellow fever extending itself in English latitudes.

The sudden accession, with intense head-ache and spinal pain ; the high fever, giving place soon to collapse ; the black vomit and yellow skin ; the suppression of urine ; the retention of the faculties ;—these are symptoms which, with death on the third day of illness, appear to establish beyond question the diagnosis of yellow fever.

Symptom of vomiting ; black vomit.

With regard to the constancy and character of the vomiting, a reference to the annexed cases will show that the symptom was present in all the 15 fatal cases. The vomited matters were unequivocally black in eight of them. Two of these eight vomited some florid blood in addition. In four of the fatal cases the vomita were of dark matters, compared variously to coffee grounds, chocolate, and beef tea grounds, and in one of these vomita blood was also found by the microscope. In another fatal case the vomita consisted of bile and mucus only, and in two others the evidence differs as to whether the sickness was of black matter or not. In the seven cases of recovery, vomiting was observed in six. In none was it black, but in one case it resembled beef-tea ; in two it consisted of bile and ingesta ; in two of ingesta only ; and in one the characters were not noted.

To the evidence of symptoms that the outbreak of fever was yellow fever it is to be regretted that the corroboration of post-mortem examinations could not be added. There was in the minds of the survivors an objection that proved insuperable to permit such an examination to be made.

Connexion of disease with Hecla.

As to the connexion of the disease with the Hecla, the evidence appears conclusive, (a) From the fact that there had been for months no other vessel in the harbour that had had any yellow fever on board ; (b) From a consideration of dates. A vessel which has acknowledgedly lost part of its crew from yellow fever, and which lands a man on her arrival to die of that disease in a few hours, enters Swansea on Sept. 9th, and remains there till Sept. 28th. From Sept. 15th, six days after her arrival, to Oct. 4th, six days after her departure, cases of a disease previously unknown at the port break out, with the symptoms and fatality that mark it for yellow fever. The vessel leaves the dock on Sept. 28th, and takes up a distant position near the harbour mouth, and from Oct. 4th to Oct 23d, the date of this report, there is no fresh case ; (3) The locality where the disease occurred again connects it with the Hecla. In a town of 30,000 people, some 18 cottages are scattered on a little low-lying island, to which the vessel importing yellow fever comes, and on which she discharges her cargo. Of the 22 cases of the fever (excluding doubtful cases of it) that subsequently break out, 11 occur in persons resident on the little island, 5 in persons who, living elsewhere in the town, have their daily work on the island, 3 in men occupied about shipping in the North Dock, and only 2 cases occur among the whole population of the large town who had no direct connexion with the island. But even these two cases occur in persons living within 150 yards of the ship, across the dock, and living in the next house but one to the cottage where the man died who was taken from the vessel on her arrival.*

Among the cases of yellow fever recorded in the following pages will be found one of much interest, where a vessel lying close to the Hecla while her cargo was discharging left Swansea for a neighbouring port, and there lost two of her crew of four, one of them certainly from yellow fever.

But it is remarkable that the Bristol and Swansea pilots, the five seamen who helped to bring the ship into harbour, the custom house officers and men, and almost all the men employed in discharging the Hecla's cargo escaped an attack of the fever (the after history of most of them being known) although they had much more direct dealing with the ship than the persons who were attacked. For this circumstance no explanation can yet be offered, but it is one which has many

* Of the seven doubtful cases five resided on the island ; one was occupied in a vessel alongside the Hecla ; and the remaining one (one of the most questionable of all the doubtful cases) alone had nothing to do with the docks or island.

parallels in etiological research, and cannot be held to constitute a material difficulty in affirming the connexion between the Hecla and the fever on shore.

During this period an almost tropical heat prevailed at Swansea, and no rain fell. Probably the climatic conditions that foster yellow fever in the West Indies have never been better imitated in Great Britain. The locality too where the cases occurred, a low lying alluvial island at the mouth of a river, is such as is particularly favourable to the disease in its native latitudes.

Was the disease personally contagious?

Granting the original connexion of the disease with the Hecla, it must also be granted (see tabular statement of cases) that in the great majority of instances the disease occurred in the individual without communication with any previous sufferer. But how does the evidence stand about its having been communicated in any case or cases by personal contagion? On the one side, in favour of such contagion are to be alleged the facts (a) that in one house on the island five persons of one family (Mahoney) were attacked in succession with more or less positive yellow fever and that Mrs Williams had had the opportunity of personal contagion from the corpse of a neighbour; (b) that in another house, at a distance from the island, where a man (Colwell) died of the fever, another man (Jones) was also attacked; (c) that two cases (Hickey) originated in the immediate proximity of the house where the originally imported case (Saunders) died; (d) that one of the medical men, Dr. Griffiths, had an attack simulating yellow fever after attendance on a case. But to each these considerations there is a drawback that greatly destroys their apparent value, for (a) each of the Mahoneys and Mrs. Williams were exposed by residence near the ship to the same direct infection from her; (b) Jones, as well as his fellow lodger, had worked on the island at such an interval before as would just make the period of incubation observed in other cases; (c) the Hickeys lived within a short distance from the ship, though away from the island, or if they did get the disease from Saunders, being the only people who received the disease from another, the fact that Saunders came direct from the Hecla, and might have brought some of her atmosphere with him, separates this case from all others of apparent personal contagion; and lastly (d) Dr. Griffiths' case is weak, inasmuch as his symptoms were, in some essential features, unlike those of slight cases of yellow fever, and also inasmuch as there was with him no exposure till two days before his attack, a period below the incubation time of the disease as observed in Swansea.

On the other side the evidence tending to negative personal contagion is about as strong as such evidence can by its nature ever be. Persons exposed to the fever-producing influences about the docks lay sick of yellow fever in various parts of the town; Norman at Clifton Row, Bowen at Fynone Street, Margaret Williams at Gower Place, Jesse at Greenfield Street, Thomas at Sketty, Lilley at Clifton Hill, Colwell and Jones (for it is fair to quote them on this side the question) at Lower Rodney Street, Wilkins at Bethesda terrace, Mrs. Wilson at Mansell Street, and Nathaniel Williams at Powell Street. Moreover Slocum died at Llanelly, and Stapleton was sick at Frampton-on-Severn and no extension of the fever occurred at either of those places. Thus that there were twelve centres from whence the disease, if it had been communicable from person to person, had the opportunity of spreading, and many of these localities were perfectly adapted for the spread of contagious diseases; yet in no single instance out of all these did any person (whose business did not lead them to the infected neighbourhood of the docks) get yellow fever or any disease at all simulating it. The conclusion then appears indisputable, that if the fever was communicable at all by personal contagion it was so only in an extremely feeble degree. If it had behaved like any of the more contagious fevers, such as small-pox, measles, typhus, or relapsing fever, it is quite certain that no such account as this could be given.—The contrary belief, that infection was received by each person severally, direct from the Hecla, is further rendered very strong by the fact that after the removal of the Hecla (and allowing for the incubation period in persons already infected) no fresh attack whatever occurred on the island or elsewhere, although the same climatic conditions persisted for some time after.

§ IV.

Further precautions.

It remains now to state what further precautions were taken for the protection of the public health, and how my instructions were carried out in advising the local authorities and others. On Sept. 28th, though the evidence connecting the outbreak solely with the Hecla, and its persistence with her continued presence in dock, was not so strong as afterwards appeared, it was seen to be a wise precaution to get the vessel immediately out of dock and I accordingly urged this measure upon the agent for the owners, and obtained his consent to her removal the same night. Means to this end were indeed being adopted at the time of my visit. The mayor had urged on the agent and on the owners the

desirability of removing the vessel, and the popular voice was expressed to the same effect in mutterings that the Hecla should be burnt if she lay another night in the dock. Thus on the evening of the 28th the vessel was taken out of the North Dock and placed alongside the east pier of the harbour, a good mile away from inhabited houses and other shipping. The result was what has been stated. Given six days for the manifestation of the disease in those that had already caught it before the Hecla was removed, no fresh instance of the fever occurred afterwards, although before her removal fresh people were coming under infection from day to day. After the removal of the ship further measures of disinfecting her were recommended. The previous processes, that had consisted mainly of evolving chlorine in the ship, appear to have been no avail. This could not indeed be established on Sept. 28th ; but it was suggested at that time that a dry gas would probably not be so effectual a purifier as the application of the disinfectant in solution to all parts of the wood-work of the ship. Accordingly, on Sept. 29th and 30th, the vessel was thoroughly washed all over with a solution of chloride of lime, and the bilge was mixed with the same substance and was then pumped out.*

The removal of the vessel out of dock involved serious responsibility on the part of her agent from the chance of injury or loss befalling her. After the second disinfection, therefore, and again, on the 10th Oct., when high winds had begun to prevail, application was made to medical practitioners in Swansea and to myself to certify that she might be re-admitted into dock with safety to the public health. Such certificate was refused however until Oct. 14th, when evidence was furnished to us that the climatic conditions of the port (see Mr. Rosser's tables in the Supplement) had undergone very considerable change, particularly that the temperature, both maximum and minimum, had been maintained at a greatly reduced point for several days.

A further precaution that appeared to be desirable was carried out by the agent of the Cobre company. The ore out of the Hecla was well washed over with solution of chloride of lime.

In all houses where cases of yellow fever occurred, the mayor acting for the Board of Health, caused the whole premises to be limewhited, and fumigated with chlorine. Dead bodies were buried without delay, usually within 24 hours.

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* Respecting the bilge water, it is stated that this was unlikely to be retentive of poisonous matter, inasmuch as copper-carrying ships are not built so tight but that water is constantly getting into them, and is being as constantly removed by pumping. So the bilge had not been previously disinfected, but it seemed wise to have it dealt with on the second disinfection.

Supplement to Report on Yellow Fever at Swansea.

(Supplement A.)—Extracts from Mr. Rosser's Meteorological Journal for 1863.

N.B.—Entries made at 9 a.m. each Morning for 24 hours. Barometer in inches. Thermometer in degrees Fahrenheit.

Day of Month.	July.					August.					September.									October.				
	Temperature.				Rainfall in 24 Hours. Hundredths.	Temperature.				Rainfall in 24 Hours. Hundredths.	Barometer.		Temperature.				Wind. Average of previous 24 Hours.			Rainfall in 24 Hours. Hundreths of the Inch	Temperature.				Rainfall in 24 Hours. Hundredths.
	In Sun.		In Shade.			In Sun.		In Shade.			Height at 9 a.m.	Thermometer.	In Sun.		In Shade.		Direction.	Force in Lbs. per Square Foot.	Velocity in Miles per Hour.		In Sun.		In Shade.		
	Highest.	Lowest.	Highest.	Lowest.		Highest.	Lowest.	Highest.	Lowest.				Highest.	Lowest.	Highest.	Lowest.					Highest.	Lowest.	Highest.	Lowest.	
1	76	50	62	48	-	75	51	74	50	-	30·16	60	68	-	63	38	N.N.W.	2·21	21	4	58	40	54	39	80
2	75	53	63	53	6	80	52	75	51	-	29·78	64	72	-	64	44	S.W.	6·13	35	18	58	39	51	38	5
3	85	50	66	49	-	91	53	79	52	11	29·72	60	70	-	65	43	S.W.	4·50	30	15	58	44	56	44	40
4	87	47	75	45	-	78	53	68	52	16	29·92	63	70	-	60	50	S.W.	2·42	22	5	57	46	55	44	33
5	83	51	66	51	-	74	46	72	44	-	29·79	59	63	-	56	40	S.W.	2·21	21	24	56	38	53	35	-
6	90	57	68	55	-	72	52	70	51	60	29·97	58	70	-	65	36	W.N.W.	1·81	19	35	46	33	43	30	13
7	82	56	68	55	-	70	53	70	50	10	23·72	62	64	-	60	43	S.W.; N.N.W.	18·00	60	70	54	35	50	32	-
8	75	55	71	53	1	70	55	70	53	2	30·03	62	68	-	58	42	W.N.W.	3·13	25	-	59	39	55	36	41
9	77	57	75	50	-	70	53	70	51	10	29·78	62	68	-	61	42	S.W.	2·64	23	50	58	41	56	39	25
10	87	61	73	55	-	68	52	68	50	1	30·02	58	65	-	59	38	N.N.W.	2·00	20	-	55	40	55	40	1
11	85	64	75	59	-	73	51	73	49	2	30·27	57	60	-	54	37	N.N.W.	3·13	25	1	53	39	50	39	95
12	94	65	83	55	-	90	46	73	44	-	30·27	58	64	-	55	41	N.W.	·980	14	-	57	39	52	37	3
13	90	63	82	58	-	87	49	75	45	-	30·32	59	60	-	57	44	W.N.W.	·980	14	1	54	38	52	39	22
14	79	57	73	51	-	89	55	76	51	-	30·44	56	60	-	54	36	N.N.W.	·980	14	-	58	41	55	41	2
15	96	56	79	50	-	78	54	75	53	15	30·26	58	60	-	55	43	W.	·605	11	-	59	42	55	43	-
16	101	63	85	55	-	76	53	73	50	4	30·14	60	61	-	56	39	W.N.W.	·980	14	-	54	39	52	38	53
17	80	48	78	48	-	76	46	60	42	19	30·20	61	69	-	60	41	W.N.W.	·980	14	-	53	48	53	49	11
18	88	42	70	42	-	76	47	55	44	2	30·13	60	64	-	57	45	S.W.	1·12	15	-	53	31	54	40	-
19	77	37	70	37	-	71	47	60	42	9	29·82	65	69	-	63	45	S.W.	2·64	23	-	55	43	63	55	7
20	86	42	75	42	-	78	47	63	41	2	29·56	56	62	-	53	38	S.W.; W.N.W.	12·50	50	16	55	44	55	55	3
21	80	42	75	42	-	82	42	63	35	-	29·26	55	58	-	50	37	W.	6·13	35	10	55	42	60	53	-
22	61	47	61	47	36	90	54	65	45	1	20·03	55	60	-	52	37	W.N.W.	5·45	33	7	57	43	58	50	1
23	68	39	68	40	-	77	55	60	49	5	29·13	56	56	-	50	37	W.N.W.	4·21	30	1	60	42	61	52	-
24	83	38	70	38	-	62	52	60	44	15	29·30	55	54	-	48	35	W.S.W.	3·13	25	108	54	34	60	43	-
25	84	47	70	47	-	75	51	62	44	15	29·70	54	52	-	49	33	W.; N.E.	1·81	19	42	53	39	56	46	-
26	75	44	70	44	-	65	49	62	42	14	30·06	54	50	-	47	35	N.W.	·980	14	5	49	32	50	40	-
27	90	43	80	44	-	65	51	62	45	11	30·17	57	58	-	50	35	W.N.W.	1·62	18	-	55	31	54	38	4
28	89	45	82	44	-	85	52	60	45	63	29·77	54	52	-	48	35	S.W.	7·22	38	35	56	35	53	45	4
29	89	43	79	43	-	70	50	56	42	-	30·03	58	57	-	52	37	W.N.W.	2·42	22	9	69	32	53	40	35
30	100	44	79	43	-	75	44	62	41	-	29·87	55	56	-	53	34	S.W.; S.E.	2·00	20	17	59	32	57	45	50
31	92	50	80	49	-	72	44	68	42	14	-	-	-	-	-	-	—	-	-	-	50	30	50	40	50

Extracts from Meteorological Journal for 1864.

N.B.—Entries made at 9 A.M. each Morning for previous 24 hours.

Day of Month.	July.					August.					September.										October.				
	Temperature.					Temperature.					Barometer.		Temperature.				Wind. Average of previous 24 Hours.				Temperature.				
	In Sun.		In Shade.		Rainfall in 24 Hours, Hundredths.	In Sun.		In Shade.		Rainfall in 24 Hours, Hundredths.	Height at 9 a.m.	Thermometer.	In Sun.		In Shade.		Direction.	Force in lbs. per Square Foot.	Velocity in Miles per Hour.	Rainfall in 24 Hours. Hundredths of the Inch.	In Sun.		In Shade.		Rainfall in 24 Hours, Hundredths.
	Highest.	Lowest.	Highest.	Lowest.		Highest.	Lowest.	Highest.	Lowest.				Highest.	Lowest.	Highest.	Lowest.					Highest.	Lowest.	Highest.	Lowest.	
1	69	-	61	48	-	72	-	69	53	2	30·08	62	72	-	68	51	W.	3·13	25	-	85	-	70	48	-
2	74	-	70	56	-	75	-	70	50	-	29·86	63	70	-	68	51	W.S.W.	6·13	35	35	72	-	69	46	-
3	60	-	60	52	16	80	-	71	46	-	29·80	63	75	-	66	53	W.N.W.	·980	14	13	65	-	63	43	-
4	65	-	60	48	-	82	-	71	53	-	29 94	60	70	-	67	51	N.W.	1·62	18	18	60	-	60	45	-
5	72	-	70	50	-	71	-	68	55	-	30·02	61	75	-	68	51	W.S.W.; N.W.	6·13	35	17	64	-	64	41	-
6	83	-	75	48	-	80	-	75	60	-	30·08	64	73	-	67	53	N.W.; S.W.	4·21	29	32	65	-	64	43	-
7	90	-	75	51	-	90	-	75	52	-	30·02	65	65	-	64	59	W.	4·50	30	10	68	-	65	46	-
8	82	-	72	55	-	80	-	73	60	8	30·06	64	70	-	68	58	W.N.W.	2·64	23	7	70	-	65	46	-
9	80	-	76	56	-	75	-	72	55	52	29·94	64	73	-	73	60	W.S.W.	7·22	38	1	67	-	62	45	-
10	82	-	80	53	-	75	-	72	46	-	30·10	60	70	-	70	50	W.N.W.	9·69	54	-	67	-	62	43	-
11	80	-	78	57	-	73	-	70	46	-	29·92	57	78	-	68	47	S.W.; N.W.	3·13	25	40	63	-	63	45	-
12	89	-	82	58	-	90	-	75	50	-	30·10	58	70	-	65	48	N.W.	1·44	17	3	70	-	64	43	-
13	82	-	80	55	-	90	-	77	52	-	29·94	60	69	-	64	50	N.W.; S.W.; W.N.W.	2·00	20	13	76	-	64	50	-
14	85	-	80	55	-	85	-	78	57	-	29·60	62	70	-	67	55	W.S.W.; S.S.W.	7·61	39	14	64	-	64	50	-
15	94	-	90	54	-	95	-	82	62	-	29·60	62	64	-	65	50	W.S.W.; S.S.W.	3·92	28	45	75	-	64	48	-
16	95	-	90	57	-	89	-	80	56	-	29·32	62	75	-	65	55	S.S.W.; W.	5·45	33	24	70	-	65	45	3
17	94	-	85	60	-	80	-	75	57	-	29·43	57	70	-	65	45	S.S.W.; N.N.E.	1·44	17	36	66	-	65	49	6
18	94	-	82	57	-	75	-	70	53	-	29·64	57	78	-	64	43	S.W.; S.E.	·720	12	76	64	-	64	49	3
19	86	-	82	56	-	73	-	68	53	-	29·80	57	69	-	65	50	W.S.W.; N.N.W.	1·28	16	16	70	-	65	51	5
20	90	-	82	55	-	83	-	71	49	-	29·93	56	70	-	64	46	N.N.W.; N.N.E.	·845	13	6	60	-	60	47	19
21	85	-	82	60	-	79	-	68	47	-	29·80	59	60	-	60	49	S.W.; W.	6·13	35	26	63	-	64	45	19
22	77	-	72	56	25	87	-	67	42	-	29·74	64	64	-	64	55	S.W.	3·64	27	15	56	-	64	48	27
23	75	-	68	56	-	79	-	68	50	-	30·06	59	69	-	68	49	W.	2·00	20	14	58	-	63	50	25
24	80	-	73	53	-	75	-	65	46	-	30·18	60	67	-	68	50	W.S.W.	5·45	33	9	62	-	65	48	78
25	78	-	73	55	-	83	-	65	48	4	30·38	60	79	-	70	50	N.W.; S.E.	1·12	15	-	74	-	66	46	-
26	75	-	71	53	18	80	-	70	43	11	30·38	55	68	-	67	46	S.W.; N.N.E.	·405	9	-	60	-	65	50	-
27	78	-	72	48	-	94	-	69	44	-	30·30	65	76	-	70	51	S.E.	2·88	24	-	60	-	65	51	-
28	79	-	75	55	2	65	-	63	53	20	30·35	60	74	-	70	51	S.E.; E.N.E.	1·62	18	-	68	-	68	52	-
29	80	-	76	54	-	62	-	62	56	30	30·30	64	84	-	70	47	S.E.; N.N.E.	·720	12	-	68	-	66	50	-
30	82	-	78	60	12	80	-	72	53	-	30·19	62	87	-	69	48	N.N.W.; E.N.E.	·500	10	-	63	-	64	40	-
31	79	-	75	58	4	75	-	72	55	45	-	-	-	-	-	-	—	-	-	-	59	-	57	45	-

Extracts from Meteorological Journal for 1865.

N.B.—Entries made at 9 A.M. each Morning for previous 24 hours.

Day of Month.	July. Temperature. In Sun. Highest.	July. Temperature. In Sun. Lowest.	July. Temperature. In Shade. Highest.	July. Temperature. In Shade. Lowest.	July. Rainfall in 24 Hours. Hundredths.	August. Temperature. In Sun. Highest.	August. Temperature. In Sun. Lowest.	August. Temperature. In Shade. Highest.	August. Temperature. In Shade. Lowest.	August. Rainfall in 24 Hours. Hundredths.	September. Barometer. Height at 9 a.m.	September. Barometer. Thermometer.	September. Temperature. In Sun. Highest.	September. Temperature. In Sun. Lowest.	September. Temperature. In Shade. Highest.	September. Temperature. In Shade. Lowest.	September. Wind. Average of previous 24 Hours. Direction.	September. Wind. Force in Lbs. per Square Foot.	September. Wind. Velocity in Miles per Hour.	September. Rainfall in 24 Hours. Hundredths of the Inch.	October.* Temperature. In Sun. Highest.	October.* Temperature. In Sun. Lowest.	October.* Temperature. In Shade. Highest.	October.* Temperature. In Shade. Lowest.	October.* Rainfall in 24 Hours. Hundredths.
1	79	–	65	45	3	70	–	65	47	23	30·25	63	70	–	70	55	N.W.	1·62	18	2	82	Not kept.	70	52	–
2	90	–	75	47	–	75	–	69	50	3	30·28	69	79	–	69	60	N.W.	1·62	18	–	89		70	54	–
3	82	–	75	53	–	75	–	65	43	9	30·32	70	89	–	75	60	W.	·041	3	–	85		70	56	–
4	90	–	80	60	–	80	–	65	48	10	30·32	67	85	–	70	60	S.E.	1·12	15	–	86		71	55	–
5	80	–	75	59	13	85	–	70	48	–	30·25	65	90	–	78	57	N.W.	·320	8	–	84		70	54	–
6	80	–	75	60	4	85	–	75	57	1	30·25	68	80	–	70	60	W.S.W.	·980	14	–	80		70	52	–
7	70	–	67	58	15	70	–	70	57	32	30·15	68	80	–	70	60	W.; S.S.E.	·320	8	–	70		68	49	–
8	72	–	70	59	7	79	–	70	57	–	30·	69	90	–	75	60	S.E.	2·42	22	–	70		69	55	10
9	73	–	68	55	–	90	–	76	50	–	30·08	68	85	–	75	58	W.S.W.	2·88	24	–	70		69	55	15
10	75	–	75	52	10	86	–	76	58	1	30·15	66	75	–	70	60	W.S.W.	4·50	30	8	75		70	53	7
11	79	–	70	53	–	68	–	68	58	85	30·36	66	69	–	69	60	W.S.W.	3·13	25	3	69		69	55	1
12	79	–	70	49	–	72	–	70	50	–	30·50	67	79	–	70	60	W.; Calm.	1·44	17	–	75		68	50	1
13	75	–	70	50	70	69	–	69	55	9	30·43	66	89	–	75	58	N.N.E.	·123	5	–	70		68	45	–
14	–	–	65	54	26	75	–	70	55	49	30·33	68	85	–	75	58	S.E.	·845	13	–	70		67	50	–
15	73	–	69	58	–	75	–	68	55	38	30·22	69	85	–	75	60	E.	2·00	20	–	69		65	45	37
16	77	–	70	60	13	70	–	65	53	5	30·26	70	90	–	78	60	S.E.; W.	1·12	15	–	66		65	40	–
17	80	–	70	60	–	73	–	65	55	–	30·36	68	80	–	75	58	W.; N.N.E.	·720	12	–	59		58	43	55
18	89	–	75	50	–	70	–	65	50	–	30·47	68	85	–	75	58	N.; N.N.W.	·980	14	–	60		59	43	18
19	70	–	70	55	28	80	–	70	48	–	30·47	68	94	–	76	58	S.E.; Calm.	·320	8	–	75		69	40	–
20	75	–	78	57	38	85	–	75	56	–	30·23	65	90	–	74	58	S.E.; E.	·720	12	–	68		55	35	–
21	75	–	75	55	68	75	–	68	55	87	30·30	63	90	–	75	52	W.S.W.; N.	2·21	21	–	62		59	38	7
22	93	–	83	54	–	78	–	72	55	–	30·44	63	82	–	68	48	N.N.E.	2·64	23	–	54		48	36	3
23	94	–	76	60	–	90	–	80	58	–	30·53	60	88	–	70	49	N.N.E.	2·21	21	–	52		50	40	70
24	80	–	78	57	–	70	–	70	56	30	30·53	62	80	–	70	53	E.	2·88	24	–	70		60	45	7
25	89	–	78	56	–	85	–	78	57	–	30·46	65	92	–	73	56	E.; S.E.	2·88	24	–	67		59	44	72
26	95	–	75	56	–	78	–	70	54	–	30·32	65	85	–	72	55	E.	2·42	22	–	60		58	45	58
27	85	–	75	56	–	89	–	80	52	–	30·16	65	87	–	75	55	S.E.; E.	2·00	20	–	64		60	45	60
28	80	–	75	50	–	98	–	80	57	–	30·23	65	95	–	75	55	S.E.; E.	1·12	15	–	65		59	36	25
29	75	–	70	54	–	80	–	70	50	–	30·30	64	84	–	70	56	S.E.	2·88	24	–	65		60	40	23
30	75	–	70	54	–	85	–	70	54	–	30·20	63	85	–	75	53	S.E.; E.N.E.	2·00	20	–	62		58	45	29
31	90	–	75	53	–	90	–	70	55	–	–	–	–	–	–	–	—	–	–	–	60		55	43	49

* October completed while this report in press.

Supplement B.

Yellow fever; recovery. —— Norman, aged 25, ship-rigger, living at Clifton Row. Began to ail on morning of September 15, feeling dull, with pain in head and lower part of belly, and feeling sick though he did not vomit.

Seen by Mr. Andrew Davies on Sunday, September 17th; then had intense headache, much noisy delirium, great pyrexia, slight yellowness of skin and eyes, urgent vomiting of all ingesta and of mucus, but nothing that was black or bloody, but about this time a little epistaxis. Continued in this state with same kind of vomiting, and two or three pale stools daily for four days, and then began to mend. Seen by myself on October 1st, sitting up dressed, skin cool, sweating freely, no eruption whatever; pulse 90, weak, has been as low as 48; tongue quite clean, rather red; appetite returning; urine reported to be "very brown," plentiful; much jaundiced; liver 3 inches below false ribs; no epigastric tenderness.—During convalescence this patient got two abscesses, the first in the ham, the second deep in the posterior part of the thigh. They progressed very slowly and materially retarded his recovery.

Norman lives with his family in a clean house up a hill, far away from the docks; his business takes him down to the North Dock daily. On the day of the Hecla's arrival (September 9th), between 11 and 12 a.m., went on board her to see the chief mate. He was by when Saunders was lowered over the side of the vessel. Observed that the ship smelt badly, before the hatches were up; the stink coming up from the forecastle chiefly. This was before any chemicals were used to the ship. Was on board for about a quarter of an hour. Next week, Norman was working on the ship Deerhound, which lay astern of the Hecla, and went on board the Hecla once or twice.

Up to October 21st, no one else was ill in Norman's house.

Yellow fever; death. David Bowen, 33, Custom House officer; lived at 3, Fynone Street. A strong healthy man until he was taken, on September 17th, with sudden headache and pain in the back, no rigor; headache got speedily so intense that he almost raved with it; took some pills, and had a stool on the 18th from them.

Seen by Dr. Griffiths on Tuesday 19th, and found in bed; face and eyes much injected; skin intensely hot and dry; no jaundice; tongue moist, with much white fur; complete anorexia; no vomiting, but some nausea; pulse 110 to 120. Pain in head and back, with fever, being the prominent symptoms, small-pox was suspected. Calomel and salines ordered. On September 20th, skin cooler and moist, less flushed; headache much less, and felt much better; tongue cleaner; bowels well open. He had vomited after every dose of his medicine, but the characters of the vomita had not been observed.

Dr. Griffiths was himself too ill to see Bowen again; for the rest of his life the man was attended by Dr. Wilks. On the morning of September 21st he was vomiting after all food, and after every dose of a hydrocyanic acid mixture. Vomit looked like coffee grounds, and was offensive, with an almost fæcal odour. There was slight pain, but no tenderness in the epigastrium. No diarrhœa. Ordered milk and chicken broth, and to continue hydrocyanic acid. At 4 p.m, the vomiting of same matters continuing, all food and medicine omitted, and ice only given. The man was getting weaker. At 7 p.m. vomiting copious and frequent, and ejecta more black than before. Sal volatile and æther ordered. At 11 p.m., in same state, and draught of chloroform, æther, and hydrocyanic acid given. On September 22d, the sixth day of the disease, found to have slept a little, he "felt much better, and should go out with his wife," he "only felt weak." At this time his mind was quite clear, and his headache gone, he was not collapsed. Skin not very hot. A few dusky spots, to which Dr. Wilks attaches no importance, seen on trunk. Slight jaundice, especially of conjunctiva, noticed this morning for the first time. Urine scanty, thick, very high coloured as if from bile. Albumen not sought for. At 8 p.m., again visited. Delirium had come on at 2 p.m., vomiting had ceased, and man was cold, bluish, and collapsed, and died same night. Autopsy not permitted.

Bowen's duty was to patrol the North Quay on the side next to which the Hecla lay. From September 10th to 16th, his hours of patrol were from 4 p.m. to midnight, and on the previous week from midnight to 8 a.m. His house is situated far away from the water at the western outskirt of the town, and is a tidy better class residence. Bowen had not been near any sick people. Special inquiry was made as to whether he had been on the Hecla. It is almost universally stated and believed in the town that he had been on board her; but upon following up this rumour to two persons who were alleged to have separately vouched for its truth, they both denied that Bowen told them so, or that they knew the fact of their own knowledge. Bowen's wife asked him whether he had been on the Hecla, and he denied it. It would have been a dereliction of duty if he had left his patrol to go on board the ship.

No other person was ill at Bowen's house up to October 21st.

P.S.—Since the above was written, the shipkeeper gives conclusive evidence that Bowen was on board the Hecla; he went to get some honey, because his throat felt sore; but this was on the 15th September; and he was again on board her the day before he was taken ill.

Yellow fever; death. Margaret Brown, married, aged 20, lived at Ferryside. Taken ill on evening of Monday, September 18, almost suddenly, with pains in loins and head.

Found by Mr. Shepherd, mid-day on 19th, in bed, with much fever, quick pulse, dry brown tongue, vomiting all food, even water. Bowels somewhat confined. No delirium. Complaining so strongly of pains in head and back that small-pox was thought of. Calomel ordered. On September 20th, third day, bowels relieved by medicine and an injection; a dark stool; not seen. In the evening she began to vomit black stuff, looking like thin soot and water, and became delirious. On Thursday 21st found much worse; delirium, and vomiting of same matter, continuing. Not collapsed. No marked jaundice. In the afternoon of this day delirium ceased. Her skin was cooler, her tongue still dry, her strength was less, but she was not actually collapsed, and in the evening the vomiting ceased. She felt more comfortable, and looked better. Soon after 8 o'clock a.m. on September 22d, Mr. Shepherd was fetched to her, and found her dead. She had not been markedly yellow to the end, nor greatly so even after death. There was no autopsy.

Mrs. Brown lived with her husband and her father's family in a house about 160 yards from the wharf where the Hecla was unloaded, and about half that distance from the yard into which the Hecla discharged her copper ore. She had not been near the Hecla; the week before her illness she had repeatedly been to see her father, who was in charge of another ship which lay in the North Dock. This vessel, the Glenudal, also came from Cuba; but her log shows that she had no sickness on board during her whole voyage.

Mrs. Brown had had nothing whatever to do with any sick people, nor with any of the crew of the Hecla nor with their clothes.

Her husband arrived at Swansea from Liverpool on September 14th, having come to England by the San Jose from Chili direct.

Up to the date of this report no one else had been ill in this house. Brown was well, and at work upon the San Jose, which had reached Swansea from Liverpool on the 29th September.

Yellow fever; recovery. Margaret Williams, aged 21, servant at Mr. Trestrail's house, abutting on Cobre Company's Yard. Taken ill at 4 o'clock on the morning of September 18; woke in the night, and found herself sick, and when she got out of bed was almost too weak to stand. All that day was sick, vomiting food, but nothing bitter. From the first she had headache, pain in the bowels, in the back and loins, and her legs

felt aching and stiff. On the 19th, walked home to her mother's house in Gower Place, a distance of about three-quarters of a mile. Soon after she vomited about the floor, the desire coming on so suddenly, and continued to vomit frequently until seen by Dr. Griffiths on September 23d.

On that day she was found rolling about and rambling, complaining of no localized pain, but pain all over her. Her face was flushed and dusky; skin very hot, and conjunctivæ slightly yellow. Vomiting frequently, only ingesta and perhaps bile, and nothing black. Bowels confined. Pulse, 110. Calomel and colocynth ordered. On September 24, Mr. Mowatt, of the infirmary, took charge of the case, and describes the same symptoms persisting up to the 29th, and then beginning to abate. She was feverish and jaundiced, but the vomiting had ceased when seen on October 1. On October 3, yellowness less, but still very distinct. Has sat up, and has eaten a little food last three days. Tongue clean, moist, not too red. Pulse, 102. Has lost flesh moderately, and is giddy when she walks about.

This girl lived in a house that was separated from the wharf where the Hecla lay only by the Cobre Company's Yard, and in this yard the ore from the Hecla was strewn. She had not been on board the Hecla, but had often passed by her. She had nothing to do with any of the crew of that vessel nor with their clothes, nor had she been visiting any sick person.

The house in Gower Place to which Williams went is ill-ventilated in a close and dirty court. The room in which the girl lay was so small that it scarcely more than held the bed. Other persons lived in the house, but no others slept in that room. Up to October 21 no case of similar sickness had occurred in this house or court.

Doubtful Yellow fever; recovery. Miss Trestrail, daughter of the house where Margaret Williams was servant. Taken ill at 3 a.m. on September 23. Seen by Mr. Andrew Davies on that day. Had intense headache, obstinate vomiting and epigastric pain, with some pain in back.

These symptoms continued for next two days, and then vomiting got better and headache disappeared. She had no jaundice up to this time.

Mr. Davies advised her removal to the country, and she was taken away accordingly on September 26. He did not see her again, but learns that she kept her bed a couple of days, and then got steadily better.

Miss Trestrail is believed not to have had to do with the Hecla or anything out of her, further than the closeness of her residence to the ship and to the copper ore wharf. These points are noted in Margaret Williams' case. The day before her illness, Miss Trestrail had walked in company with Mrs. Wilson (also a fatal case of the same disease) from home into the town, and had gone on to Gower Place to see the girl Williams.

Yellow fever; death. John Jesse, aged 24, an apprentice in Messrs. Richardson's ship building yard, lived at 9, Greenfield Street. Had been at work on 16th, taken ill on September 18th. Seen by Mr. Davies's assistant on September 20th, when he had a hot skin, flushed face, delirium; with tongue red, dry in centre, epigastrium tender, and vomiting all his food. Pulse full, over 100. On September 21st felt better; pulse 80; tongue cleaner; but vomiting continued; ejecta not seen. On 22d seen by Mr. A. Davies, and was then vomiting constantly and copiously; vomited matter was quite black, looking like dark powder suspended in colourless liquid, scarcely tinging white paper dipped into it. Tongue red, and in centre dry and brown. Diarrhœa present, with dark stools. Strongly jaundiced, but no eruption on skin; urine scanty, with a slight tinge of bile; albumen not noted. At this time did not complain of much pain; was in a collapsed and half comatose state, from which he could be roused. He died the same evening during an effort of vomiting.

This man was at work daily in the "patent slip" of the ship building yard adjacent to the Cobre Wharf where the Hecla discharged her cargo. From 9th to 15th September he worked on the Fort Regent, a ship that had lately come from Australia, and which lay at the end of the patent slip nearest to the wharf. He had no business on board the Hecla, and contradictory accounts were received as to whether he had been on board her, but from the evidence of a fellow workman, named Huxtable, who was himself on the Hecla with Jesse, it is certain that Jesse was on that ship for at least a quarter of an hour on September 9th.

The house in which Jesse lived is in the middle of the town, above one third of a mile away from the Hecla in a straight line. Up to October 21st, no other case of illness had occurred in the house.

Yellow fever; death. Sarah Wilson, aged 52, married, living in Richardson's Yard. Had previously been subject to fits, and has for years complained of her heart. Was in her usual health on September 22d, in the middle of the day, when she left her house, and walked into the town to 5, Mansell Street, her daughter's house, a distance of some three quarters of a mile. While there she was taken suddenly ill with a chill and headache, which got worse, and she was quite delirious at night.

She was seen on morning of 23d by Dr. Griffiths, who found her in bed, rolling about with great pain in the back of her head and spine, and complaining too of cramps in the legs. Her face was red and flushed. Skin hot, moist. Pulse about 110. Vomiting of all ingesta. Bowels confined. Not jaundiced. Dr. Griffiths talked over the case with a brother physician, suspecting that the strange symptoms might be due to spinal meningitis. Ordered calomel and saline. She was reported to be better in the afternoon. On 24th Dr. Griffiths, though himself very unwell (see his own case after), went to see her, and found her apparently better, saying she should go home to-morrow. But her vomiting continued in spite of remedies, and was now of a dark matter. In the evening, her husband came to say that his wife's throat was very bad, and that she had been still sick, with blood in the vomit. At one a.m. on the 25th a message was sent to Dr. Griffiths that she was vomiting blood; he went to her, and found her dead, with much bright blood about her linen and bedclothes. He examined the throat, and found no appearance of the blood having come from the fauces. An autopsy was refused, and Dr. Griffiths was obliged to make the best guess he could as the cause of death for a certificate, and, knowing then nothing of the existence of yellow fever, conjectured that the symptoms were due to some disease of the heart or great vessels. But afterwards, looking back on her whole case, and influenced by what he has since seen of other cases, and by the character of the illness of Mrs. Wilson's daughter, Dr. Griffiths considers that the death was in all probability from yellow fever.

The house in which Mrs. Wilson had lived up to her illness is situated close to the end of the Cobre yard, which alone separated it from the wharf where the Hecla unloaded. The copper ore out of the ship was placed in this yard. Mrs. Wilson had been much at home, and it is pretty certain that she never was nearer to the Hecla than her own house. Her husband had been three times on board the vessel, at uncertain dates, the last time probably on the 21st September. Her sons had been about the docks, but deny having been near the Hecla. Nothing had been brought from the ship to her house, nor had any of the crew or their things been there. She had had no communication with any sick person.

Doubtful slight yellow fever; recovery. The husband of this last patient, who has been above referred to, was ailing on the day of his wife's death and funeral, the 25th September, and sent for Mr. Thomas, who found he had pains in the head, was feverish, and had dryish tongue, with dark yellow fur; he had vomited food, but nothing else, and was not purged. I saw him myself on October 28th, and found him sitting up, his mind clear, head not aching, no pain about him. Pulse 78, strong; temperature, 96·3°. Skin cold, perspiring. Tongue moist, white, pale. No epigastric tenderness; liver not

enlarged ; a very questionable yellowness of face and eyes, none of trunk. Four or five dark loose stools yesterday, not from medicine. Upon inquiry after Wilson on October 1st and following days, he was always found out of doors, and reported well.

Probably yellow fever ; recovery. Mary Ann Wilson, aged 18, a daughter of the preceding. Began to be ailing on evening of 25th September, with headache and nausea. Next day throat was somewhat sore. Seen by myself on 28th, and found pale, perspiring, and faint, feeling chilly and giddy, and her head aching, but no other pain. Pulse 126. Temperature 103·8°. No jaundice. Tongue moist, foul; no vomiting; has taken no food to-day. Two stools to-day, not observed. Seen again on October 1st, lying down dressed, feeling better. Skin cooler, 101·4° in axilla. Pulse 102. No jaundice. Tongue clean, natural colour. Anorexia continues. Has vomited yellow bitter stuff every day since 28th; twice to-day. Bowels natural. On October 3d, she continued to vomit food and bile, bu had not jaundice. Tongue clean, and moist. Bowels regular; stools neither very dark nor very light, she says. Pulse 80. Skin still hot, dryish, but occasionally perspires. Has no pain in head, back, or legs. Feels better, and can stand to-day. October 5th, quite convalescent; appetite returning. Skin of natural temperature; not jaundiced.

This patient had been in circumstances identical with her mother's, as regards exposure to sources of infection.

Under the same roof with these patients are offices of the Messrs. Richardson, into which numbers of people come on business; and the Wilson's family comprises others than those noted; but the sickness did not extend to any other person in the premises.

At Mansell Street, where Mrs. Wilson lay through her illness, no other person was taken ill up to October 21st.

Yellow fever ; death. William Thomas, æt 23, another apprentice in Messrs. Richardson's yard, lived at Sketty, a village two miles off Swansea to the west. Was ailing a fortnight before he sent for medical advice, but had nothing definite the matter with him till September 26th, when on waking in the morning he had severe headache and backache. He was very feverish, with rigors and much headache, when seen on that day by Mr. Davies's assistant; his pulse was 110, full, scarcely compressible; no eruption on the skin, which was hot and moist. No epistaxis. Slight nausea and epigastric tenderness. No vomiting; no stool for two days. Urine plentiful, of natural colour. On September 27th, vomited food and mucus, and afterwards bitter yellow and green stuff, and more epigastric tenderness; scarcely any delirium. Seen by Mr. Andrew Davies and myself on 28th; less headache and feels better; answers well. Skin hot; guessed at 101°, moist, not yellow. No spot or eruption. Conjunctivæ yellow; pulse 82, strong, full. Respiration quiet; no cough. Tongue, reddish, moist; vomited this morning dark green matter; with a little red blood in it, perhaps amounting to a tablespoonful; at that time the nose bled slightly; has no sorethroat. Bowels open by medicine. Urine rather high coloured, but not jaundiced, good quantity; not so dark to-day as yesterday. September 29th, Mr. Davies found that he had continued better up to 10 p.m. yesterday; delirium set in at 11. In the night he dozed frequently, but wandered and talked much. Vomited six times during the night, but only ingesta. This morning, his countenance heavy ; intelligence dull. Skin dusky yellow; urine in good quantity, clouded by heat and nitric acid. At six p.m. his pulse was 128, very feeble; temperature, low. Tongue protruded, and kept so. No vomiting, and no action of bowels. At 10 p.m. cannot be roused; moaning much. Vomita now black powdery; and the man is afterwards convulsed. Death at 11 p.m. on the same day.

There had been no communication between Thomas's house at Sketty and the Hecla; infection must have been got while he was at his work in the shipbuilding yard adjoining the Cobre yard. I questioned him myself as to his connexion with the Hecla, and he said he had not been on board her, and that Mr. Richardson's men had done no repairs or painting for her. He had passed by her on the quay. From a return furnished by Messrs. Richardson, it appears that Thomas was at work on the Fort Regent while in the patent slip (see Jesse's case) up to the 15th September. On the 18th he worked on the Orasio in the patent slip. On the 16th and 19th he was working on the Marquess of Worcester, which lay in the North Dock 100–120 yards to the north of the Hecla. This vessel was from Chili direct, where there is no yellow fever. On the 19th he was also on the Herradura, another vessel direct from Chili, and from that time to the day he left off work he was on the Sclavonia, from the Mediterranean, in the patent slip. There had been no yellow fever in any of these ships, but they all lay within a hundred yards of the Hecla. Thomas had not been near any sick persons.

After Thomas's illness, no other person in the house or village was attacked, up to October 21st.

Yellow fever ; recovery. James Lilley, aged 50, residing at 5, Clifton Hill, and employed as a smith in Mr. Richardsons' patent slip.

Complained on October 3d, of pain in back of head, loins, and bowels, with shivering ; was hot and feverish all that night. Seen by Mr. Hall on October 5th. Skin hot and dry ; quick pulse. Felt sick, but did not vomit ; bowels relaxed ; stools thin and of a yellow colour. On October 7th feverish symptoms had subsided ; pain in stomach and bowels complained of ; skin tinged of a yellow colour; no appetite. Up to October 11th he remained in much the same state ; intellect unaffected ; temperature of skin normal, yellow colour increased ; small purpuric spots observed. Pulse 72, soft. Has not vomited, but feels sick ; tenderness over liver and cæcum. Bowels still relaxed with chocolate coloured stools. October 12th, has had a better night, slept at intervals ; skin much as yesterday, but more purpuric spots ; pulse as before. Tongue rather dry, thirsty, pain in lower part of bowels ; vomited several times during night a watery fluid containing green bile ; bowels open several times, thin yellow stools. October 13, is certainly better ; slept nearly all night, feels more comfortable ; skin of natural temperature ; no new purpuric spots ; old ones fading. Tongue clean, appetite returning ; vomited twice, watery fluid with stringey looking mucus ; two thin bilious stools. October 15, going on favourably, and feeling better. Pulse 64. Very few spots now on skin ; copious sudamina ; less jaundice. Tongue furred ; appetite improving. Tenderness over liver and cæcum remain ; liver two or three fingers breadth below margin of ribs. Two dark brown stools ; urine deeply tinged with bile.

Lilley's residence is far from the island, but his work brought him daily to the North Dock.

He lay sick at the house at Clifton Hill, and during his illness there were 20 people residing in the house. The house consists of two rooms with a back kitchen on the ground floor, and two bedrooms above. A man and three chi dren slept every night in the same bedroom with the patient all through his illness. But no other person in the house has been ill up to the end of October.

Yellow fever ; death. John Colwell, aged 25, a smith, resided at 5 Lower Rodney Street. A strong hearty man. Taken ill on September 13, the principal symptoms being great fever, severe frontal headache, acute pains in back, and great prostration, and vomiting of all kind of food. On 22d, there was a marked improvement, but next day he was worse again.

Seen by Mr. Couch on 23d September. He was then jaundiced for the first time. His tongue was remarkably clean and moist. He was vomiting large quantities of black somewhat tenacious fluid. Stools were not seen. On 24th, at 5 a.m., Mr. Couch found

him with dry black tongue, vomiting as before, raving and struggling frightfully. He died the same day at 11 a.m. in convulsions, having passed neither stool nor urine for 6 hours.

This patient worked at a blacksmith's shop at the back of the Cuba Hotel in the neighbourhood of the docks, but 200 yards in a straight line from where the Hecla lay. He had seen the Hecla, and when asked if he had been on board, said he would not go for 20*l*. He had had nothing to do with any ship. His widow believes that he saw nothing of any one or anything connected with the Hecla, and the man himself plainly stated so. He had not been near any sick people. His hours of work were from 6 a.m. to 6 p.m., and his road to work would not take him nearer the Hecla than 200 yards. Colwell lived in a tidy poor house, about a mile off his work, in the southern part of Swansea. Up to October 21st, no illness had occurred in the house since this man's death.

Yellow fever; death. Elizabeth Davies, aged 55, housewife, resided at Bath's Yard.—First ill on 20th September; taken with fever and vomiting; confined bowels; not much headache. On 21st, seen by Mr. Hall; obstinate vomiting continuing, of dark brownish fluid. On 22d, her skin first noticed to be yellow, particularly over abdomen; eyes not so yellow; tongue moist; not very thirsty; vomiting and fever continued. Pulse weak, not above 100. Next day the vomited matters were black, and remained so up to her death. The jaundice increased; some doubtful petechiæ were noted on skin of abdomen. For some days she had complete suppression of urine, and general convulsions for some hours before her death in the evening of September 26th. After death her body was much more yellow.

Mrs. Davies lived in a house upon the quay of the North Dock, about 140 yards above the spot where the Hecla lay while unloading. She had had no one and nothing out of the Hecla, in her house, so far as her friends knew. She had not been out of doors for some time, except each Sunday (10th and 17th September) to church, and on the day of her attack, to market. On these occasions she would pass the Hecla, but she never went on board her. She had not been near any sick people.

Yellow fever; death. Elizabeth Harris, aged 15, grand-daughter of preceding, and living in same house.—Taken ill on the 21st September, with symptoms that were referred to ordinary autumnal diarrhœa; dark stools and vomiting. Three days later, on the 24th, the diarrhœa was better, but the vomiting had continued, and become dark; as it soaked into the bedclothes making a stain as if chocolate had been spilt. On the 25th the tongue had become dry; there were sordes on the teeth. The skin, especially of the abdomen, was observed to be yellow. And, besides these unfavourable signs, she suddenly got into a very excited state, resembling hysteria, continually screeching, and obstinately refusing food or drink. There was no eruption on the skin. Her urine was suppressed for two days at least before death, which occurred on the evening of September 27th, the patient having got quieter, but more insensible, and the vomiting having persisted nearly to the last.

This girl lived in the same house, under the same circumstances, as her grandmother, only she had been into town most days, instead of seldom.

The house is clean and new. Up to October 21st there had been no other attack in the house.

Yellow fever; recovery. ——— Jones. The particulars of this case are thus stated in a letter from his medical attendant, Mr. Shepherd:—"He lived in the same house as "Colwell, who commenced his illness on Sunday September 17th (stated to me Sep- "tember 19th, Tuesday) and died on the following Sunday. Jones first felt unwell "on the day after Colwell's death, September 25th. He was much better on Thursday, "and returned to work on the Tuesday following. I am not prepared to assert positively "that he suffered from yellow fever, inasmuch as there was no black vomit, but the "pyrexia, prostration, vomiting, sense of weight and uneasiness at the epigastrium, a "decided though slight tinge of yellowness, and finally the "black" (he says) purging, "and crampy pains about the legs, are symptoms which, I think, justify my belief that "he was suffering from that disease. Now as to source of infection. On one hand, "he was living in the house with Colwell, and with him a good deal. On the other, I "find that Jones was engaged on Thursday, September 14th, (three days before Colwell "began to be ill,) in carting copper ore from a French brig in the south dock to "Mr. Bath's yard, and on the day following, when he went to be paid for his labour, was "standing for some time near the Hecla, talking to a policeman about the deaths that "had occurred on board, feeling a particular interest in the matter, as one of the men "who died was a friend of his. So that we have very good evidence of the probability "of infection from the original source, with a period of incubation of 10 or 11 days."

Yellow fever; death. John Wilkins, æt. 18, living at Bethesda Terrace, and working in the assay office at Mr. Bath's copper ore yard.—Was taken ill on October 1st, with shivering, and pain in the head and limbs. He had a restless and disturbed night; felt very hot and feverish; and on October 2d, about 7 a.m., was seized with vomiting and purging. The purging was not much, but the vomiting continued through the whole day. Thinking he had a bilious attack, such as he had suffered from before, he took a couple of pills, such as he was in the habit of taking, and they produced large bilious evacuations. On October 3d he was seen by Mr. Hall, who had attended the former cases at Bath's Yard, who found him complaining of pain in his head and limbs. Had had a restless night, but was quite sensible. Skin very hot and dry; conjunctivæ injected; pulse quick and full; tongue rather clean; some thirst. Vomiting constantly a watery fluid containing some stringy looking mucus, and a small quantity of yellow coloured bile; had had several large dark bilious stools. On October 4th, slightly improved; pain in head and limbs not so great, but complained of giddiness. Skin cooler; vessels of conjunctivæ natural. A doubtful trace of yellowness in the skin. Pulse not so quick and less full. Sickness and diarrhœa continued, of the same character as before. October 5th, has had a better night, and fewer stools. Vomiting as before. Skin distinctly tinged yellow. Urine copious; dark from bile. On October 6th and 7th no vomiting, but in other respects much the same. Was not seen on October 8th, but found very much worse on the 9th, having become very feverish and delirious in the night, with slight epistaxis. Quieter at time of visit, but pulse very quick; sordes about the lips and gums; no vomiting; thin chocolate coloured stool from castor oil. Stool passed involuntarily. Urine retained; three pints of dark urine removed by catheter. He continued to become gradually worse, and died about 3 a.m. on October 10th. After death the skin became much more yellow.

This patient was brought by his work into the same proximity to the Hecla as the two females whose cases have just been described. Some samples of copper ore from the Hecla were assayed in Mr. Bath's office, where John Wilkins was employed.

Yellow fever; death. Jane Mahoney, married, aged 46, lived at 8, Cobre Row.—Illness began on September 20th, with headache, but her symptoms do not appear to have been strongly marked for the first day or two. She had medicine from a druggist on the 22d, and was seen by Mr. Mowatt, of the Infirmary, on the 23d, at 3 p.m.

She was then complaining of headache and pains in the limbs; was vomiting, but only food. Had a dry tongue and skin, and pulse about 100. She was next seen on the 25th, when the vomiting was found persisting, and the vomited matters were dark in colour: but as it appeared that this could be ascribed to some brown cake she had just eaten, the colour of the vomit attracted no particular attention. On September 26th there was marked yellowness of the skin and conjunctivæ. The patient was in a heavy semi-conscious state, answering questions coherently but languidly. Skin moist; no typhoid spots. Pulse below 80, very weak. Tongue dry and fissured; sordes on teeth. Marked

abdominal tenderness; less sickness. (Mr. Mowatt never saw dark vomita, except as above described, nor could he ascertain that they had been of such colour; but Mrs. Mahoney's daughter Mary told me, on September 28th, that her mother had had much black vomiting.) Ordered brandy to be frequently repeated. On September 27th, the skin was of a peculiar dusky appearance. The sickness had ceased. The patient was more difficult to rouse, and refused to take nourishment. She sank rapidly, and died the same day.

After her death she was intensely yellow, with a peculiar lividity that struck Mr. Mowatt and myself who saw the corpse on different occasions.

Mrs. Mahoney, with her husband and eight children, lived in Cobre Row, in a small cottage consisting of two rooms, one above the other; overcrowded, therefore, and not clean. The court called Cobre Row is unpaved, with receptacles for ashes and coals in front of each house, a foul privy with a cesspool at one end, common to nine houses, and a common supply of town's water from a standtap in the court. This row of houses runs along the side of the Cobre Company's Yard, where the ore from the Hecla was deposited, being separated from the yard by a footway, and a wall some ten feet high. The Hecla, at her place of unloading, was less than a hundred yards in a straight line from the row of houses. The Mahoneys' house was the nearest but one of the row to the wharf.

The man Mahoney was employed in discharging the cargo of the Hecla on the 9th September, and again from the 11th September to about the 20th, working on board the vessel day after day. On September 9th, when people were shy of going into the hold, on account of the sickness on board, Mahoney was one of the first to go down, and stayed an hour and a half, a longer time than customary. He did not change his clothes on coming home from his work. He himself did not suffer from fever at all; he was indeed ailing on one day, on October 3d, with headache, but no vomiting, and was well the next day, after a dose of medicine from the dispensary.

None of the crew of the Hecla had come to Mahoney's house. No washing for the ship or for the sailors had been done by the Mahoneys. Except the father, the family had had nothing whatever to do with the ship, or her contents, beyond living in the proximity that has been described. Mrs. Mahoney had not been near any sick person, nor had any of those who afterwards were attacked in the house had to do with other sick persons than members of their own family.

Yellow fever; recovery. Hannah Mahoney, aged 11, was taken ill on September 22d, with headache, prostration, hot dry skin, and vomiting of everything she took into her stomach, but of nothing else. The vomiting continued up to the 25th, and the stools were frequent, loose and black; has had no active delirium, but has lain half conscious and stupid.

She was attended by Mr. Mowatt of the Swansea infirmary.

Seen by myself on October 28th. Skin then hot and dry, no eruption, no jaundice. More conscious to-day, and can just answer yes or no. Pulse 108°, medium strength. Temperature of axilla 101·8°. Respirations not accelerated. Tongue dry and brown; slightly moist at edges; sordes on teeth; no vomiting now. Several loose stools; none seen. Has passed fair amount of urine, not particularly dark. On October 1st, again seen by me, and found lying outside bed dressed. Skin and conjunctivæ moderately jaundiced. No eruption on skin. Headache, and slept ill last night, but no other head symptoms. Sordes gone from teeth. Tongue dryish, thick, yellow fur. No vomiting. Abdomen concave; epigastrium slightly tender. No stool yesterday or to-day. Pulse 98°. Temperature 99·0°. Respirations quiet.—October 2d. Tongue still dry; still no vomiting; no stool. Complains still of head. Pulse and temperature about same. Ate an egg this morning. October 3d, more jaundiced. Skin moderately cool and dry; no eruption. One stool from an aperient powder last night, said to have been dark. Liver edge three quarter inch below false ribs. Head much better to-day. Perhaps a pint of urine passed in the 24 hours; not seen; reported to be natural in colour. October 4th, less jaundice. Tongue cleaning; moist at sides. No sordes. No vomiting, but no desire for food. Liver edge as before. No stool. Slept well for first time last night. Skin dry; temperature 99·10. No eruption. Pulse 84. October 5th, going on well, but slowly.

This girl had been in the same circumstances as her mother.

Yellow fever; death. William Mahoney, aged 18, a ship carpenter in employ of Messrs. Richardson, living with his family in Cobre Row.

Was taken ill on September 24th, and seen by Mr. Mowatt on the 25th, when he had dry tongue, great tenderness of the whole abdomen (especially of the iliac and hepatic regions), occasional sickness, but not of a dark material, and no diarrhœa. Pulse very rapid. Skin dry, distinctly yellow, conjunctivæ same; no spot on skin. On September 28th was perfectly unconscious; very restless and unmanageable. Refusing all kinds of food and medicine. Pulse hard and rapid. [Friends report of him, as of mother, that he had much black vomiting. Mr. Thomas, who saw the case, noted small round petechiæ on the body]. September 27th, Head hot; unconciousness continuing. Motions dark, of liquid consistence, they and the urine passed involuntarily. Skin still dry; head hot. Sank rapidly, and died in the evening.

The external post-mortem appearance of yellowness mixed with lividity was also noticeable in this boy, being very striking to myself as well as to Mr. Mowatt.

William Mahoney had been under the same conditions for infection as his mother and sisters, and had also been working on vessels in the "patent slip" of Mr. Richardson's yard. He had been engaged from September 9th to September 15th on the the Fort Regent (see Jesse's case), and he had also been working on vessels from Chili and the Mediterranean, which lay within a hundred yards of the Hecla; but he always stated that "he had not been near" the Hecla herself, and that he had nothing to do with any sick people.

Probably yellow fever; recovery. Jane Mahoney, æt. 10, taken ill on morning of September 30th, with headache, but no pain in back; vomiting of bile and food. No epistaxis. Seen by myself on October 1st. Skin hot and dry; injected, but no rash; a very doubtful trace of jaundice. Temperature 102·9°; pulse 128. Tongue moist, thin white fur, not very red. No epigastric tenderness. Vomita seen, of yellow liquid and curdled milk. Abdomen soft, not tympanitic. One stool yesterday evening, reported of natural colour, but rather loose. Plenty of urine of natural appearance. October 2, Head hot aching; no wandering. No pain in back, but some in legs. Skin about same heat as yesterday. Pulse 108. Tongue red, moist, slight white fur. Thirst. Frequent vomiting of same yellow stuff. Two stools this morning, brown, not very dark. Slight yellowness of conjunctivæ to-day. Urine copious, not seen. October 3, Headache continuing; slept ill. Pains in legs continue. No œdema. Skin not so hot; no eruption. No increase in yellowness of eyes, and none at all observable on skin. Pulse 92; weak, regular. Tongue dry in centre. Has vomited frequently, but to-day only curdled milk and water, without bile. Slight epigastric tenderness. One stool, after a powder, last night; not saved for inspection. Liver an inch below edge of false ribs. October 4th, Better. No jaundice. Temperature, 97·7°. Tongue dry, furred in centre, red and moist at edges. Anorexia; has taken nothing but milk and water. Vomiting now only watery stuff. No stool.

On October 11, Mr. Mowatt met this child, with her sister Hannah, out in the street quite well.

Probably yellow fever; recovery. Susan Mahoney, aged 6, seen by myself on October 3d, the first day of ailment. Began to cry with headache at seven in the morning, and soon after, before she had any food, vomited thick slimy stuff, and has vomited several times since, but nothing of a yellow or black colour. No tympaniti, nor epigastric tenderness. Tongue white, moist. No jaundice. Liver one inch below ribs. Bowels confined. Skin hot; pulse 160. No pain in legs or back. In the later part of this day headache became better and vomiting ceased, and on visiting the house next day she was reported to be well and had gone out. However, on October 5th, she was found at home, lying down, and feeling very bad. Skin was very hot; guessed by the hand at about 104°. Surface much injected, but no rash. Face flushed; no jaundice. Pulse 150. Tongue moist, red, slight white fur in centre. Had vomited all food, even cold water, since last night. Some pain in belly, but no epigastric tenderness. Child looks very heavy, and says her forehead aches. Mr. Mowatt reports, on October 12th, that she had since progressed very favourably, all her symptoms gradually disappearing, and that she was then quite convalescent. The sickness did not continue; there was no yellow tinge of the skin, nor any symptoms that would have suggested yellow fever, in the absence of the other cases in the family.

The two last recorded children had been in the same conditions of exposure to sources of infection as the other members of the family, with the addition of having been in the house (though not sleeping in the same room) during the illness of the previous cases. Other four or five persons living in this house, and all other residents in Cobre Row remained well up to October 21st.

Yellow fever; recovery. James Hickey, aged about 35, landlord of the Pelican Inn in the Strand, was taken ill on 20th September suddenly with vomiting, and a "queer feeling," which he did not further describe. Seen by Mr. Howell Thomas on the morning of the 21st, and found in bed on his right side. Countenance depressed, and anxious. Cramp in the extremities. Skin dry and harsh. Conjunctivæ very red. Pulse 102. Tongue dry and furred, except the tip and edges, which were light red. Intense thirst. Pain at epigastrium increased on pressure. Incessant vomiting through the night of matter resembling mustard in colour. Confined blackish stool. Urine scanty, dark smoky brown, highly albuminous. Next morning, September 22d, had a very bad night, and found rather worse at visit, having vomited everything taken. One stool of very black colour. Pulse 109. Urine much the same in quantity and colour. A little easier in the evening, having less pain in epigastrium, and less cramp, but severe headache and lumbar pain. Had vomited frequently during the day. Another very black and offensive stool. Pulse again 109. On the morning of 23d again seen; much less headache and pain in back, but more in epigastrium. Slight intolerance of light. Pulse 103. Vomited every ten minutes through the night, much darker matter than before, resembling strong beef tea. Fancied he could eat a chop, but could not touch it when brought. Evening, more thirst; complete anorexia; less epigastric tenderness. Bowels still rather constipated; one very black stool. Pulse 100. Urine increased in quantity; higher in colour. September 24, passed a much better night, sleeping at least three hours. Skin and conjunctivæ very yellow; mulberry coloured spots on either side of abdomen and above back. Vomiting not so frequent, but vomited matter darker in colour. Two loose stools, not so dark or offensive. Pulse 98. Urine passed frequently; not so dark or so albuminous. Same evening found still a little better, having slept a little. Pulse 95. Had vomited three times only, lighter coloured matters. One stool, still less dark. On 25th, at 10 a.m., same state as last night; at half past seven p.m. had taken a little fish, and enjoyed it. Had less thirst, but had vomited twice. One stool. Pulse 93. Had passed urine twice. On 26th September, still improving. Slept four or five hours, and feels refreshed and stronger. Sitting up in bed, and wanting to get up. Skin and conjunctivæ very yellow. Skin beginning to get moist. Pulse 93. Tongue clearer and moister. Vomited once in night. No stool. Urine much lighter in colour. Evening of same day, had slept a little. Skin warm and perspiring. Pulse 90. Tongue cleaning and moist. No vomiting. Plenty of urine. On 27th September, much better, but decidedly more yellow. Mulberry spots continue. Appetite good. Sat up for an hour.

Hickey was seen by myself on October 1st, sitting up, convalescent. Intensely jaundiced, Skin cool; natural in moisture. On the trunk, front and back, a copious slightly raised rash of a very bright mulberry colour, disappearing almost absolutely on pressure. Tongue clean and moist. Pulse 80. Has not lost flesh much by the illness.

October 16th, has now quite recovered, but traces of jaundice still persist.

Yellow fever; death. Elizabeth J. Hickey, aged 23, wife of former patient, living at same house. First ill on September 22d. Few particulars can be obtained of her case beyond the general statement that her symptoms much resembled those of her husband, with the addition of copious black vomiting. She miscarried on September 25 of a five months' child, then gradually sank and died on the 26th.

Hickey had not been on board the Hecla, nor since her arrival had he been at all on the other side of the water, nor nearer to the vessel than his own house. He had bought nothing from the ship. This man's case and his wife's were the only ones of all those of yellow fever in Swansea where the patients had not been resident or engaged upon the island. Hickey's house is situated about 150 yards from the spot where the Hecla unloaded, some small courts, and the breadth of the North Dock lying between. On one day, but not until after Hickey was taken ill, she lay on the west side of the North Dock, and therefore a little nearer to the patient's house. But Hickey had a special indirect communication with the vessel. When Saunders was brought on shore on the 9th September it was to a house in Welcome Court, very near to the back door of the Pelican Inn; a small house only intervening. Hickey states that he did not see Saunders during life, but that he helped to put the coffin on the cart on the afternoon of the 9th, and he took some whiskey in to the friends of the man, probably before the means of disinfection were used. The room in which Saunders lay had not much furniture or bedding in it; and what of such things came out of the ship could not be ascertained. The drains and privy of Hickey's house do not communicate with those of Saunders' house, nor with any other.

Doubtful yellow fever; recovery. Dr. Griffith, M.B., living in Dynevor Place, a high part of Swansea, away from the docks. Was in the country on September 21st, when he felt ill almost suddenly, and in the course of three hours was so weak that he could not stand, and went to bed where he was, in the country, in the afternoon. He had two or three distinct rigors and his feet were cold. No positive headache, though he had had some before starting in the morning. His pulse was very languid. After a good dose of hot grog, he felt better at midnight. On 22d he still felt ill, but returned home. Observed his urine very high coloured, evidently bilious, but was not then jaundiced; bowels were confined. Thence to 28th remained in much same state, taking no food, but not vomiting. Bowels confined. Began to be jaundiced on 24th, and stools, at last obtained by mercurial purges, were light drab coloured. On 28th he felt decidedly worse, and on evening of 28th vomited several times food with large quantities of dark thin fluid, which tasted acid, and not bitter; perhaps its brown colour might have been due to some claret he had taken. Yellow colour of face was now more decided, and urine

remained very bilious and scanty. Throughout he had not been very feverish, but perspired easily, and found his pulse slow, about 60. His head never ached much, and not at all after the first four days, but he felt very muddled and stupid. Every day he got about to see some patients; but at times he was unable to go when he was sent for, feeling too weak and ill to move. On September 30th he saw for the first time a trace of bile in the stools, and felt better, and his head clearer; urine, which had been very bilious and scanty, improved; and on October 1st he was convalescent, though the jaundice remained on October 2d, when he gave me this account.

From the time of the Hecla coming in Dr. Griffiths had not been near her, nor even near to the docks. He saw none of the crew, and the first of yellow fever he saw was Bowen, on the 19th, two days before his own illness.

Yellow fever; death. Mrs. Rachel Williams, living at the top of Cobre Row. Her case is given in the text of the report. She was taken ill on September 29th, and died on October 1st, having had distinct black vomit and jaundice.

Yellow fever; death. Nathaniel Williams, aged about 40, a carpenter in Messrs. Richardson's copper ore yard, was seen by myself on October 1st and 2d, and then was in quite good health, though on the 2d distressed by the loss of his wife. Was at her funeral on October 3, and only on morning of October 4th began to be ailing, with slight headache. Sought medical advice on the next day, and at 5 p.m. on October 5th was seen by myself. He was then in a state of intense prostration, seemingly conscious, but answering no questions; much quiet wandering reported by friends. Says "no" when questioned if his head aches. Makes no complaint of back and loins. Has a peculiar vertical frown, much like that observed in his wife Skin not hotter, perhaps cooler, than natural. Conjunctivæ decidedly yellow. Over both hips small purpuric spots, mixed with a few faint stains. Pulse 90, regular and strong, feels slower.* Tongue intensely dry and brown. Thirst great. Epigastrium very tender. Vomited yesterday, but only food. To-day has vomited for the first time a tablespoonful of a liquid looking just like beef-tea grounds, and of acid reaction. Has had no beef-tea. The microscopical elements of the vomit (examined next day) were scanty blood in masses and few separate corpuscles, epithelium of the squamous variety only; great quantities of torula, and some starch granules. One stool to-day, seen, scanty, yellowish, slimy. Urine reported to have been plentiful, thick and dark, up to this morning, and that he has passed very little since 4 a.m. At visit he was got to pass some urine, which was about 2 oz. in quantity, clear, pale amber-coloured, with a trace of albumen. He died about 8 p.m., on the same evening, with the same kind of trismus and convulsive action that was met with in his wife. He remained semi-conscious to his death. No post-mortem examination could be procured.

Williams, up to the time of his illness, was in the same conditions as his wife in regard to the proximity of his residence to the Hecla and to her freight. In the course of the first week that the Hecla was discharging cargo (10th to 17th September) he was on board her once, but he could not say which day.

When he was taken ill he lay at a house in the town, at some distance from his own, on the other side of the water; in this house no inmate has been taken ill up to the date of this report.

The distance of this man's attack from the direct communication with the Hecla is remarkable. It was 25 days after she came into port; 23 days from her professed disinfection; 20 days, or thereabouts, after he had himself been on board her; 14 days from the end of her discharging her cargo; and six days from the time of the vessel having been put out of Swansea Docks. His illness began five days after his wife's definite symptoms began, and three days after her death.

Cases on the smack Eleanor.—On September 21st, the Eleanor, a wooden vessel of 48 tons, Richard Evans, master, and a crew of three men, laden with copper ore, arrived from Swansea at the pilot station of Llanelly (the port next to Swansea on the west), and was there boarded by a Llanelly pilot named Thomas, who took her along the Burry Estuary as far as the lighthouse, and there left her in charge of another pilot, who saw her to Penclawdd, a village where there are copper works, on the side of the estuary opposite Llanelly. At that village she discharged her cargo, and on the 22d September arrived at Llanelly in charge of a Penclawdd pilot.

At Llanelly she lay in the channel to the new dock, outside the dock, at a considerable distance from any houses, but quite close to other ships. Here she proceeded to load with coal.

The pilot Thomas can answer that she had no sickness on board on the 21st, and he was told by Slocum, the mate of the vessel (whose case is presently to be told), that all on board her were well on the morning of the 24th. However, on the 25th, one of her seamen named Charles Hayes died in the forecastle of the Eleanor.

Perhaps yellow fever; death. An inquest was held upon Hayes's body on the 26th, and the coroner has obliged me with copies of the depositions. Evans, the master, states that on the 23d Hayes complained of weakness and of internal piles. [The landlady of the inn where the inquest was held had understood he had venereal disease.] Did not see him again till the 25th, when he said he was very poorly. Upon returning to the vessel, after seeking an order to admit him into the workhouse, Evans found him apparently in a dying state, and he shortly died. There was no violence. Hayes had not complained of sickness [? illness] during the time (twenty months) that he had been with the vessel. He complained of no pain till the day of his death, and took his meals well. The mate, John Slocum, confirming this evidence, states that Hayes was not well on the 23d, got worse on the 24th and 25th, and died on the 25th at 1 p.m., continuing to work up to a very short time of his death. The other seaman, Daniel Stapleton, says that Hayes complained of weakness on the 23d, but of no particular pain; that he went in search of a doctor on that evening, but was too late to see one; only complained of piles. Hayes was on shore on 24th, and was on the deck of the Eleanor on the 25th, but appeared worse. He went down into the forecastle about one o'clock, when witness found him lying on his belly, and he shortly afterwards died.

This was all the evidence. No medical man saw the case, and none was called to give evidence on the inquest. No post mortem examination of the body was made. The verdict found was, "Died by the visitation of God."

Yellow fever; death. The mate of the Eleanor, John Slocum, aged 60, was stated to have been taken ill on September 25th, but he gave evidence at the inquest on the body of Hayes on the 26th, and nothing particular was observed in him then. He was sent aboard after the inquest, but came on shore again the next day, when he was taken in at the Prince Albert Inn, and Dr. Richard Thomas saw him there.

He was then very feverish and prostrate, but not delirious, complaining of headache, and pain in the epigastrum, which seemed to be caused by the incessant vomiting. Threw up food and bile; bowels had been confined some days; pulse was full and frequent. On the 28th he was reported better, but was not seen by Mr. Thomas. On the morning of the 29th was found apparently better; he was lower, but suffered less pain, and was not delirious. Pulse was weak, but frequent; the skin was clammy, not

* This appearance, to a practised finger, of the pulse being slower than it was proved to be by the watch, was noticed in more than one case. It seemed to come from a deliberate character, so to speak, of the stroke, perhaps the strength of the stroke being so much greater than in the ordinary fevers of England.

hot. Tongue dry, with a brown fur. Vomiting had ceased, and the bowels had been well acted on by calomel and colocynth; urine was highly coloured and scanty. At 1 a.m. on the 30th September Mr. Thomas was called to him, and found him greatly changed, evidently sinking; greatly collapsed and pulseless, muttering delirium; no convulsion. The tongue as before; he was vomiting copiously very dark matter, which Mr. Thomas thought was blood, not in clots, but as if half digested. The stools were seen for the first time this morning very loose and black, as if from dark blood, but no florid blood in them. The skin was not noticed to be yellow; upon the belly spots not removable by pressure were observed. Conjunctivæ were yellowish throughout, and not observed to be yellower in the progress of the disease. [His landlady, however, who nursed him, stated to me spontaneously that the whites of the eyes were very yellow. Her description of what he vomited was that it stained the sheets like coffee.] He died at 5 a.m. on the 30th September. The body was not seen by Mr. Thomas after death. No post mortem examination was made.

Yellow fever; recovery. The boy of the Eleanor (the Daniel Stapleton of the coroner's depositions) was noticed by Mrs. Forsdyke, the landlady of the Prince Albert Inn, who had nursed Slocum, to be ailing on October 2d, as if he had a cold. He was frightened too, having been with Hayes at his death, and knowing of the death of his other fellow sailor. Mr. R. Thomas visited him in the evening, and found him feverish, thirsty, with full rapid pulse, headache, nausea, but no vomiting; confined bowels. No other symptom was noted. An emetic was given, and next morning he walked half a mile to Mr. Thomas's house, and seemed to have very little the matter with him. He got his wages paid, and went off home to Frampton-on-Severn, on the same day, October 3.

The history of the boy after reaching Frampton is told in the following extract from a letter from Mr. Watts of Frampton: "He was ill, when he got home, with an undefined "attack of fever, and slight yellowness. I then supposed that it was a simple attack of "continued fever, complicated with jaundice. He had headache, pain in the loins, but "no sickness or diarrhœa. In a few days the jaundice became intense, the face almost "black. At the end of a fortnight he complained of great pain in the right leg, and had "inflammation of the lymphatics, with general swelling of the limb, rapidly ending by "abscess in the thigh, which I opened early. At the end of the third week he was much "improved in health, and has so far recovered as to go to work, though the skin has not "entirely lost its yellow cast. The case throughout was characterised by very slow "pulse and extreme prostration. I was not aware of Stapleton's connection with yellow "fever cases until I had attended him some time, and my diagnosis was not all clear.

On the evening of October 2d, the chairman of the local board of health of Llanelly, having a certificate from Mr. Richard Thomas that the Eleanor ought to be separated from other vessels, ordered her out of the port. It is reported that some measures of disinfection were used. Next day, October 3d, Evans having got a new crew of two or three men), not from Llanelly it is said, for the Llanelly men were afraid of his ship), and having already loaded with coal, sailed for Waterford.

Hayes body was buried immediately after the inquest, and Slocum's as soon as possible after his death.

Up to October 4th, when inquiry was made, no similar case, nor any case of sudden illness, had occurred in or about the houses where the sick seamen had been, nor had any such case been reported from the shipping. Llanelly is a very dirty town, but no fever of this sort is known to have occurred there before. Mr. Thomas knew of only five or six cases of any sort of fever, and they were of the common continued type, and none were in the neighbourhood of the docks. At the date of this report no other case had occurred at Frampton, though it was a crowded cottage where Stapleton lay ill.

The Eleanor was loaded at Swansea on September 18th. She came to her berth, however, partly inside the Hecla [that is, with part of the vessel lying between the Hecla and the wharf,] on the evening of the 16th, and remained there over the 17th. While taking in her cargo of copper ore, she lay close above the Hecla, to the north. This week was just the time the Hecla was discharging cargo. No ore from the Hecla was taken by the Eleanor. The crew of the Eleanor had been with her for various periods, the shortest being nine months.

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COPIES of REPORTS of the RESULTS of INQUIRIES into DISEASES prevailing Epidemically in Parts of NORTH EUROPE (in continuation of Parliamentary Paper, No. 246, of the present Session).

Privy Council Office,
29 June 1865.

EDMUND HARRISON.

PAGE.

I.—REPORT of the Results of an Inquiry into the Nature of the Fever or Fevers prevailing epidemically at St. Petersburg, during the Winter 1864–5, by George Whitley, M.D. - - - - - - - - - - - - - 1

II.—REPORT of the Results of an Inquiry into the Epidemics of Cerebro-Spinal Meningitis prevailing about the Lower Vistula in the beginning of the present Year, by John Burdon-Sanderson, M.D., F.R.C.P. - - - - - - - - - - - 4

— 1. —

REPORT of the RESULTS of an INQUIRY into the NATURE of the FEVER or FEVERS prevailing epidemically at *St. Petersburg*, during the Winter 1864–5, by *George Whitley*, M.D.

IN the early part of the month of April last, I received instructions from the medical officer of the Privy Council to proceed forthwith to St. Petersburg, for the purpose of ascertaining, for the information of the Lords of the Council, the nature of the fever or fevers then epidemically prevailing there. I was especially directed to learn whether any fever then existing in St. Petersburg was of a kind not habitual to the United Kingdom, or (if not different in kind) was modified in any important particular from forms with which English practitioners are familiar.

Pursuant to these instructions I arrived at St. Petersburg on the 15th of last month, when Her Majesty's Ambassador had the goodness to put me into communication with the Ministers for Home and Foreign Affairs, and with the various medical authorities, civil and military, from all of whom I received every facility for the prosecution of my inquiry.

With such assistance I was soon enabled to ascertain that no form of fever, or other disease unfamiliar to English practitioners, had prevailed in St. Petersburg. Continued fever, typhoid or typhus, commonly prevails somewhat extensively there, but in August last cases of a form of fever, unknown to the practitioners of that city, began to present themselves, which, however, Dr. F. Hermann, chief physician of the Aboukhow Hospital, soon ascertained and declared to be the relapsing or famine fever so well described by Scotch and Irish authors, and others. The further course of the epidemic, and concurrent testimony of other physicians, having fully confirmed the accuracy of this view, it appears unnecessary to enter into any details here as to the nature of the disease.

Before proceeding to give an account of the severity of the epidemic, a few words concerning the sanitary state of St. Petersburg generally, and especially since the autumn of last year, may be of use. This city, with its swampy foundation and copious rainfall, surrounded on all sides by water, and exposed to extreme changes of temperature, affords, even in the best years, a very unhealthy sojourn for the poorer inhabitants. The population, which

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amounts to about half a million, is distributed over a large area; but, notwithstanding this, much overcrowding takes place amongst the poor, and since the autumn of last year an unusual number of labourers have flocked to St. Petersburg without a corresponding increase of house accommodation. Thus, when I called the attention of the Minister of the Interior to a statement in English journals, that 43,000 more labourers than usual were living in the city this winter, he merely remarked that he believed the figures were not quite correct. One case was mentioned to me in which 60 men were found lying closely packed on the floor of one room wrapt in their sheepskins, with door and windows closed to keep out the cold. The atmosphere of this room was stated to be so charged with carbonic acid that a candle would scarcely burn in it.

The following official return from the various hospitals of St. Petersburg gives an approximate view of the severity of the present epidemic, though, doubtless, many cases have occurred which are not included in this return, not only at a dispensary which I visited, but amongst the poor at their own homes.

NUMBER of Persons admitted into the Civil and Military Hospitals of St. Petersburg from the Commencement of the present Epidemic to 1st March 1865.

Hospitals.	Admitted.		Died.	
	Typhus.	Relapsing Fever.	Typhus.	Relapsing Fever.
Aboukhow	1,315	2,312	306	390
Maria	1,521	736	169	47
St. Peter and Paul	558	540	51	7
Mary Magdelen	453	734	92	40
Alexander	1,699	821	350	101
Kalinkine	100	10	20	2
Izmailow, temporary	209	1,865	47	189
First Military	876	307	106	41
Second Military	173	116	26	9
Kalinkine, Naval	92	9	11	4
Préobajensky	46	66	4	2
Moscow	30	94	8	4
Grenadier	25	15	8	—
	7,097	7,625	1,198	836
TOTAL	14,722		2,034	

The epidemic reached its height in the months of January and February last, when the admissions into the civil and military hospitals, for all diseases, sometimes amounted to 300 a day, while the mortality, in February 1865, was double that of February 1864.

In addition to the unhealthy state of the dwellings of the poor, mentioned above as constant for St. Petersburg, and the unusual crowding, during the present winter, the chief food of the lower classes, bread, cabbage, and fish, were scarce and inferior in quality, and vegetables in general much destroyed by early

early frost. Further, an almost tropical heat in June, and the beginning of July, was succeeded by a cold damp autumn and an early, unusually severe, winter. If we bear in mind also that the water supply is taken from the River Neva, and often much polluted by surface drainage, and that large quantities of very inferior spirits are consumed by the poorer inhabitants, it will at once be understood that an epidemic of relapsing fever, once introduced amongst such a population, might well assume proportions even more formidable than the present one.

One set-off against the unsanitary conditions mentioned above may be of interest, viz., that even the poorest inhabitants of St. Petersburg take a steam bath at least once a week, generally on Saturdays; and I was able personally to convince myself at the dispensary that although their clothing is often very dirty, their skin is cleaner than is usual amongst a similar class elsewhere.

The relapsing fever of the past winter in St. Petersburg offers few features worthy of special mention in reference to its rise and progress, its causes, its extent and fatality, its prevention, or its treatment, resembling very nearly in these respects, epidemics described as occurring elsewhere. It was impossible at the time of my visit to obtain an exact account of the proportion of cases in which glandular swellings, so-called buboes, occurred; but I ascertained that parotitis was rather common, often double, while any affection of the inguinal glands was much less frequent. Cases with these complications very commonly proved fatal.

The treatment was chiefly expectant, and it did not appear that the use of quinine or any other medicine could check the relapses or modify the general course of the disease.

The post-mortem appearances, also, with one exception, resemble so closely those described elsewhere as to render any lengthened notice of them unnecessary. The spleen was the organ most constantly affected to any considerable extent, the liver less frequently, while the kidneys were often but slightly congested. The exception alluded to was furnished me by Dr. Kremiansky, of the First Military Hospital, who states that of 720 autopsies made by him from the beginning of September 1864 to the middle of March 1865, 49 presented well-marked hæmorrhagic inflammation of the dura mater. The paper he kindly sent me just as I was leaving St. Petersburg is a preliminary one only, and does not state how many of these persons died from fever, but the general table given above refers to about the same period. A similar post-mortem phenomenon does not appear to have been observed to any great extent at other hospitals; but the observations of Dr. Kremiansky are of interest in connexion with the epidemic cerebro-spinal meningitis prevalent in Prussia.

Although the St. Petersburg epidemic of the past winter adds but little to our previous knowledge of relapsing fever, it affords a good illustration of the manner in which the disease is modified by the circumstances under which a population lives. The general table furnished by the various hospitals presents some striking differences in reference to the mortality in them, of which, had time permitted, I should have been anxious to seek for some satisfactory explanation; but I have reason to hope that a young English physician, resident in St. Petersburg, will, ere long, publish a detailed account of the whole epidemic. Most probably, however, the low rates of mortality would be found dependent upon a better previous position in life and more favourable conditions in reference to ventilation, &c., in the respective hospitals.

The class of persons amongst whom the epidemic prevailed only a little less extensively than amongst the poor labouring Russian population were the military; but even here the better food and more healthy dwellings were generally accepted as sufficient to explain the comparatively low rate of mortality.

Amongst the English and German workpeople and their families, amounting in number to several thousands, the epidemic has prevailed to a very slight extent only, with a low rate of mortality; while the upper classes have remained almost entirely exempt from that particular form of disease, thus furnishing one more striking instance of the connection between relapsing fever and destitution, with its concomitant evils.

10 May 1865. (signed) *G. Whitley*, M.D.

— II. —

REPORT of the Results of an Inquiry into the Epidemics of Cerebro-Spinal Meningitis prevailing about the Lower Vistula in the beginning of the present Year, by *John Burdon-Sanderson*, M.D., F.R.C.P.

On the 7th of April I was instructed by the medical officer of the Privy Council to proceed without delay to Dantzic, for the purpose of obtaining information for the Lords of the Council as to the nature, causes, prevention, and treatment of the disease reported to be prevailing epidemically in that town and in other places in the valley of the Vistula, and to report on the rise, progress, and extent of the epidemic.

I accordingly left London on the morning of the 8th, and arrived in Berlin on the 9th. Having on the following day had the honour of an interview with his Excellency Herr von Mühler, Minister of Public Instruction, and having also conferred with Professor Hirsch, who had completed a similar investigation, undertaken by order of the Prussian Government, I proceeded on my journey, and reached Dantzic on the morning of the 11th of April. I at once placed myself in communication with Her Britannic Majesty's Consul, W. A. White, Esq., with whom I waited upon the Prefect of the Department, and the general in command of the garrison. By the Prefect I was introduced to the superior medical officer of the department, Medicinal-und Regierungs-Rath, Dr. Keber, who received me with the utmost courtesy, and afforded me every possible facility in the prosecution of my inquiry. By this gentleman I was introduced to Oberstabsarzt Dr. Kuhn, physician in charge of the hospital of the garrison, to Oberstabsarzt Dr. Häser, physician to the town infirmary; to Sanitäts-Rath Dr. Hildebrandt, physician to the Marien Hospital; and to Dr. Abegg, physician to the Protestant Deaconesses Hospital, through whose kindness I had the opportunity of observing such cases of cerebro-spinal meningitis as occurred among the patients under their care during my stay in Dantzic.

I subsequently visited those places in the valley of the Vistula, and in the adjoining rural districts, in which cases of meningitis were reported to exist.

A.—Description of the District in which the Epidemic prevailed.

1. *Geography.*

The epidemic of cerebro-spinal meningitis was almost entirely confined to the country comprised within the Department of Dantzic (province of West Prussia) which lies between longitude 18′ 0″ and 19′ 35″.* The Department is divided into seven districts or circles, viz., Berendt (population, 40,863; area, 459·0 square miles); Carthaus (population, 54,109; area, 521·4 square miles); Dantzic (population within the walls, 85,327, including 7,196 military, without the walls, 72,608; area of the whole district, 467·8 square miles); Elbing (population, 64,281; area, 258·2 square miles); Marienburg (population, 58,048; area, 302·6 square miles); Neustadt (population, 58,297; area, 526·6 square miles); Stargardt (population, 64,169; area, 510·0 square miles).

The department is intersected by the two great branches into which the Vistula proper divides close to its southern boundary. The eastern branch is called the Nogath, and joins the Frische Haff near Elbing, while the western retains the name of Vistula, and again divides near the sea into two branches, one of which flows into the Frische Haff, the other into the Baltic. Between these two branches and the Frische Haff on the south, and the sea on the north, lies an insulated strip of land called the Nehrung.

The Höhe. The aspect of the country is very varied. The western portion of the department is hilly, in some places almost mountainous, and is called the Höhe. This district extends from the eastern boundary of Pomerania to the valley of the Vistula, and comprises the circles of Neustadt, Carthaus, Berendt, and parts of the

* Since the above was written I have learnt that between the 11th and 31st of March about 20 cases of cerebro-spinal meningitis occurred at Graudenz, a small town situated near the Vistula, about 70 English miles above Dantzic. It is believed that there were a few cases in the surrounding villages.

the circles of Stargardt and Dantzic. The ranges of hills are in some parts parallel to each other, but in others they diverge in such a manner as to form an irregular network, and to give to the whole country an undulated character. The intervening valleys are so shallow and wide, that they might almost as correctly be described as table lands, their elevation being very little less than that of the summits which surround them. The highest point is the Thurmberg (1,022 feet above the sea), near the town of Schönberg. The whole of the hill district is scattered over with erratic blocks of granite, which are met with in such numbers that they are everywhere used for making roads and for building. Extensive peat bogs are met with in every direction, which occupy the troughs of the valleys. There are besides innumerable lakes and morasses, into some of which considerable streams discharge themselves. The three largest of these lakes have a collective area of about 25 English square miles. Great part of the district is clothed with forests of Scotch fir, but there is very little underwood.

The subsoil is diluvial, consisting either of sand and gravel, covered with loam, or of pure sand. When the latter is the case, as in the circles of Berendt and Stargardt, the soil is sterile, whereas those parts of the hill district which are loamy (as, *e.g.*, the neighbourhood of Dantzic and Dirschau), are in the highest degree fertile.

Werder and Nehrung.

The level tracts of country which comprise the delta of the Vistula, and the alluvial lands on either side, are called Werder and Nehrung, and have together an extent of 500 square miles. The Nehrung, as already stated, is an insulated strip of land between the Vistula and the sea. It is exceedingly fertile; its soil consisting of alluvial mould to a depth of five feet. Under this is a bed of pervious gravel, by which natural drainage is promoted. Those parts of the Werder (under which term is comprised the whole of the alluvial lands, excepting the Nehrung), which are nearest the Vistula and Nogath, lie below the mean level of the water, for which reason they are protected by weirs which extend along the stream on either side. These low-lying lands, which are called collectively the Niederung, are necessarily drained by mechanical means. In some parts, where the protection afforded by the weirs is insufficient, they are liable to be inundated every spring when the ice breaks up on the upper part of the river, and the snows melt on the Carpathian mountains. Towards the sea, the Nehrung is flanked by a range of low sand hills (Dünen) planted with fir trees.

Malaria.

Throughout the whole of the country above described the conditions of soil favourable to the development of malaria are present. In the Niederung these conditions exist in the greatest intensity. For the purpose of freeing the land from the rain and snow water, with which it is inundated every spring, canals are constructed at different levels, with which the country is intersected in all directions. To lift the water from the lower to the higher levels, machinery worked by wind or steam is employed. As, however, these canals are in use only during the spring months, the stagnant water which they contain becomes during the summer covered with algæ and other water plants, and eventually evaporates in autumn, leaving behind it a mass of half putrid vegetable *débris*. Throughout the whole of this district cases of ague are frequent. I am informed by Dr. Scheel (who resides at Gros Zünder in the Niederung), that in the fall of the year, to be for a few hours on the banks of one of these canals is sufficient to ensure an attack; a result which is frequently observed in persons who have reclined at the waterside to sleep off the effects of over indulgence in the common drink of the country—*schnapps*. The cases occasionally exhibit the characters of pernicious intermittent, and terminate fatally within a week, being complicated with excessive congestion of the liver and spleen, pyæmia, and secondary inflammation of the lungs, kidneys, and other organs. In general, however, the cases are mild, although varying much in their duration and symptoms.

Although in the hilly district fatal cases are not met with, true agues and other intermittent forms of disease occur in great frequency. The conditions of soil in this district, although not so unfavourable as in the Niederung, are yet decidedly malarious, for everywhere the atmosphere is impregnated during the dry months of the year with the effluvia arising from the gradual desiccation of the extensive marsh lands which occupy the valleys and elevated plateaux, and surround the numerous lakes and ponds.

2. *Dwellings.*

Construction.

As no good building stone is to be had in the country, most of the cottages are constructed either of wood alone, or of wood and slime. The worst specimens were met with in the fishing hamlet of Bodenwinkel in the Nehrung, and in the circles of Berendt and Stargardt. At Bodenwinkel the cottages usually cover an area of about 1,000 square feet, and are divided into four rooms on the same level, each of which is occupied by one family. The whole is covered with a gable roof and thatched with straw. The rooms are always ceiled, and are floored with thick boards, which are laid on the bare ground. As they are not more than seven feet high, the capacity available for each family is about 1,300 cubic feet. They are warmed by large stoves, constructed either of glazed earthenware tiles or of brickwork, and furnished with *Kacheln* for cooking. A single casement window (of about nine square feet area) affords the only means of ventilation. There is no provision either for drainage or the deposit or removal of refuse, whence it results that the ground surrounding the cottages is everywhere polluted with deposits of ordure and foulness of every description.

The above may be taken as a sample of the habitations of the very poorest of the peasants in the low-lying districts. The cottages of those who are better off are more spacious, but in other respects they are of similar construction, with the exception that they often contain one or two rooms only. Many cottages were occupied by single families, but it was never found, even where there were two rooms, that more than one was used either as a sleeping place or for other domestic purposes. Both in town and country, the houses inhabited by the better classes are spacious and well built.

Number of inhabitants in each house.

According to statistical results of the Census of 1861, each family includes five persons (this relation holding good both in the town and country). In the rural villages the average number of inhabitants to each house is exactly 10, so that there are two families in each. In Dantzic, where many of the houses are very spacious, there are 18 inhabitants to each house. In the Werdur and Nehrung most of the cottages are scattered over the country at such distances from each other that the divisions between adjoining parishes are entirely arbitrary, but in the Höhe they are for the most part collected in compactly built villages, at a distance of several English miles from each other.

Density of the population.

In the Werder there were in 1861, 0·026 inhabitants per acre; in the Höhe, 0·013.

3. *Climate.*

The climate of the neighbourhood of Dantzic differs from that of London in being less equable. The following table exhibits the mean temperature observed at Greenwich, at Dantzic, and at Schönberg, a small town in the very centre of the principal epidemic area, situated in the most elevated part of the hill district, at a height of 700 feet above the level of the sea.

——	Winter.	Spring.	Summer.	Autumn.	Year.
Greenwich (1841-63) -	39·7	52·8	59·9	45·0	49·3
Dantzic (1848-59) -	33·7	43·7	63·1	47·4	46·08
Schönberg (1848-59) -	26·26	39·9	59·6	43·6	42·34

Thus it appears that Schönberg is exposed to an exceedingly severe winter temperature. It is stated that in the hill district the frost of winter lasts from the middle of November to the end of March, whereas near the sea it continues only for the first two months of the year.

4. *Wages and Subsistence.*

As regards wages and means of subsistence, there is a remarkable difference between the condition of the agricultural population of the valley of the Vistula and that of the hill districts of Carthaus and Berendt.

In

In the Werder, an ordinary farm servant receives 3 *d.* a day in addition to his board and lodging. His board consists of meat three times a week (11¼ oz. each time), and bacon daily (3·65 oz.), with oatmeal, porridge, barley, and rye bread *ad libitum*. In the hill country, the daily wages of a farm servant never exceed 2½ *d.*, and his diet is more restricted. He has meat only twice a week, and two pounds of rye bread daily, to which is added potatoes *ad libitum*, with sour milk, herring, or pease soup. The estimated cost *per diem* of a diet of this description is 9 *d.*

The condition of the day-labourers (who constitute 31 per cent. of the agricultural population) is much inferior to that of the farm-servants. Labourers of this description earn from 1 *s.* to 1 *s.* 6 *d.* per day in the summer, and not more than 6 *d.* in winter, so that their total earnings are not more than sufficient for the purchase of a diet of the very moderate character above described.

The amount of pauperism appears to be much greater than in this country. In the rural districts 83·6 families in every thousand are in the receipt of relief, of which 48 per cent. are entirely supported at the public expense.*

5. *Drinking Water.*

Throughout the whole district drinking water is abundant, but its quality is open to objection. Almost all of the farms and villages are provided with wells sunk to a depth of about 10 feet below the surface. In the Niederung the water thus obtained, although limpid and transparent, is of a pale amber colour, resembling that of hock. This colour it derives from the peaty subsoil in which the wells are sunk. In those villages which adjoin the Vistula, I found that the water of the river was preferred by the peasants, although at the time of my visit it was extremely turbid. In the hill country, the water of the wells is probably of better quality, but there is no doubt that in many places water of alluvial origin is used for domestic purposes.

The town of Dantzic derives its water supply from a small river called the Radaune. It is taken from the stream at a point about a mile above the town, and is distributed by wooden conduits (such as were formerly in use in many country towns in England). These are laid under the streets at a level of several feet below the surface. As the Radaune takes its origin from one of the lakes in the circle of Carthaus, its water is alluvial. It is much complained of by the inhabitants, who are now agitating for a better supply.

B.—Origin and Progress of the Epidemic.

Outbreak of cerebro-spinal meningitis at Bromberg.

In the beginning of February 1864, cerebro-spinal meningitis broke out in the town and immediate neighbourhood of Bromberg, a place of 30,000 inhabitants, and distant 100 miles from Dantzic. The disease prevailed epidemically until the middle of June, when it entirely disappeared. During this period, about 140 persons (of whom 132 were children under 14) are known to have been attacked, and it is conjectured that about 50 died.† In the month of December, it is reported by Dr. Wolff,‡ that six cases occurred at Czikczyn, in the district of Conitz, Department of Marien-Werder, which adjoins the district of Berendt on the west side. Of these, four ended fatally after from 24 hours' to four days' illness. Three of those attacked lived under the same roof. It is surmised by Dr. Keber that during the intervening period sporadic cases may have occurred between Bromberg and Dantzic, but none such have been heard of.

Origin of the epidemic in the Department of Dantzic.

For a variety of reasons it is difficult to determine with precision at what time and place the epidemic in the Department of Dantzic originated. This uncertainty arises mainly from the fact that in the neighbourhood in which the disease first appeared, the peasantry are mostly Poles, and very poor, and that at first the sufferers were allowed to die in great numbers, without having received medical advice. Although there exists in Prussia a provision for gratuitous attendance on the poor, the privilege is restricted within much narrower limits than

* In England, in ordinary years, about 45 persons per thousand of the population receive parochial relief, of whom about 16 per cent. are entirely supported at the public expense.

† Berliner Klinische Wochenschrift, 1864, p. 328.

‡ Communicated by Med. Rath Dr. Keber.

than in this country, whence it results that when children only are concerned, medical assistance is often not called in unless the parents are able to pay for it without difficulty. Thus it happened that a great many children died without attendance, either because the doctor was not called in at all, or was summoned so late that before he arrived the patient was dead. In all these cases the cause of death was entered in the church book as "undetermined."* It is further to be remembered that the practitioners were at first entirely unacquainted with the characters of the disease, so that although subsequently even the premonitory symptoms became familiar, at its outbreak it was not recognised even in its advanced stage.

Berendt.

It appears that the attention of the government of the Department of Dantzic was first directed to the existence of the epidemic on the 21st of February 1865, by the parish minister of Schönberg, a place about 30 miles south-west of Dantzic, in the hill country. This gentleman had observed that 48 children, under 12 years of age, had died between the beginning of the year and the date of his communication. An official inquiry was consequently set on foot by the prefect, in the course of which it was established that the epidemic had existed in the district of Berendt since the new year. It was ascertained that at Neu Barkoczyn a fatal case occurred as early as January 2d, but it was not established with any certainty that there were no other cases previously. It is, indeed, the opinion of Dr. Keber that the disease was at that time already prevailing epidemically in the village of Kornen, and he has information that there was at least one case, a few days before, in the village of Gross-Klintsch. It is, at all events, certain that the disease was first recognised in the neighbourhood of Berendt during the early days of 1865.

The following table † exhibits the numbers of deaths that occurred in each parish of the district during 11 weeks. It shows that 347 persons died during that period, of whom 318 were children under 14 years old, so that the mortality during the period in question amounted to 8·49 per thousand of the population:—

TABLE showing the Number and Dates of Deaths from Cerebro-Spinal Meningitis in the Circle of Berendt, and the Ages of the dying, between 2 January and 21 March, 1865.

PARISH.	Number of Deaths.				Date of Death.	
	Children under 14 years of Age.		Above 14.	Total.	First Case.	Last Case.
	M.	F.				
Wyschyn	2	4	–	6	11 February	20 March.
Berendt	51	38	5	94	9 January	21 „
Zblewo	2	–	–	2	5 March	8 „
Niedamowo	1	4	–	5	23 February	10 „
Garczau	1	2	–	3	19 „	17 „
Alt Grabau	5	6	–	11	12 „	17 „
Garczin	3	2	4	9	5 „	5 „
Lippusch	30	26	2	58	14 January	15 „
Pogutken	1	–	–	1	14 „	—
Schöneck	11	11	–	22	13 February	16 March.
Alt Kyschau	17	28	3	48	12 January	15 „
Neu Barkoczin	11	16	–	27	2 „	11 „
Sommin	1	2	–	3	26 February	9 „
Schönberg	7	6	–	13	18 January	14 „
Mariensee	11	5	2	18	16 „	14 „
Neu Paleschken	10	4	1	15	7 March	15 „
Other Parishes	–	–	–	12	—	—
Total	164	154	17	347	—	—

The above Table shows that, as far as may be judged from the dates of deaths, the disease broke out in the three parishes of the Berendt district, in which

* There is no registration of deaths in Prussia.

† Compiled from the Report of Landrath Engler to the Government of the Department of Dantzic, 25th March 1865.

which it was eventually most destructive, during the second week of January, the first death being recorded at Berendt on the 9th, at Alt Kyschau on the 12th, and at Lippusch on the 14th of January. The two last-named parishes are severally at a distance of 12 and 7½ English miles from Berendt in opposite directions. Probably about a week later, fatal cases began to occur in Schönberg,* the parish in which it first attracted the attention of Government. Before the end of January deaths were reported in several adjoining villages.

Carthaus.

For some time the disease did not extend beyond the immediate neighbourhood, but about the middle of February it appeared in other parts of the Circle of Carthaus as well as in Carthaus itself. Dr. Marcuse, of that place, who is strongly disposed to attribute its spread to contagion, was unable to ascertain that there had been any intercourse between the places first invaded and the districts already infected, and it is remarkable that, with the exception of Carthaus, there was no epidemic prevalence of the disease in those villages which are situated on the high road from Dantzic into Pomerania, and consequently have frequent intercourse with each other, although sporadic cases were met with.

In Carthaus and the neighbourhood the epidemic appears to have attained its height in the beginning of March. At the time of my visit to Dantzic, April 11th, it was reported, that on the 26th of the previous month the epidemic was rapidly subsiding, although there were still cases. Up to that date, 311 fatal cases had occurred within the Carthaus Circle, in all of which the nature of the disease was verified by competent persons. In Dr. Keber's opinion the numbers really exceeded 400.

Extramural district of Dantzic.

In the extramural district of Dantzic meningitis appeared only a few days later than in the Circle of Berendt. In those villages in which it prevailed it manifested as destructive a character as elsewhere, but its area of prevalence was restricted within narrower limits; it was confined to the Nehrung and that part of the Niederung which adjoins the Vistula, appearing on either side of the Dantzic arm of the river at the same time. The village of Gotteswalde was first invaded; about 10 persons were attacked during the first two weeks of January, of whom four children and one adult died. It was not until the middle of February that cases began to occur in Schmeerblock and Schönrohr, two adjoining parishes, the houses of which are scattered in an irregular manner over a considerable tract of marsh land on the left bank of the Vistula. Up to the time of my visit there had been about 20 cases in these parishes, about half of which had been fatal. In Gross Zünder two cases occurred early in March, one of which was rapidly fatal, after which no one was attacked until April 10th, when four farm labourers took ill within a few days of each other, one of whom died. Of these patients it appeared that two were employed in the same farm, but did not sleep in the same bed; the other two resided in different farms. In other adjoining parishes there were only sporadic cases. In the Nehrung the first case that came under observation was at Fischerbabke, on the 17th of January, but it is believed that a case had already occurred at Junkertreil. Subsequently the disease appeared simultaneously at the neighbouring villages of Stuthof, Bodenwinkel, and Steegen, the first case (which was fatal) being that of a child of the resident medical practitioner, who took ill on the 10th of February. In all not more than 20 cases had occurred in the three villages. After this there were a few cases in the scattered farmhouses on the flats (so-called Cämpen) which lie between Stuthof and the Vistula. At the time of my visit (April 18th) fresh cases were reported at Junkeracker, Kronenhof, Schiefenhorst, Freienhuben, Schönbaum, and Letzkauer Weide, all of which are scattered villages lying between the bifurcation of the Vistula and the Baltic.

Town of Dantzic.

In Dantzic a case came under the care of Dr. Lissauer on February 10th, the child having been ill for seven days previously; but about the same time (February 5th) another child took ill in an opposite quarter of the town. It was not until March that the disease assumed a formidable character. During the month of February the deaths from acute diseases of the brain numbered 24, whereas the mean mortality from the same causes in the corresponding months

* Schönberg is situated in the Circle of Carthaus, at no great distance from its southern boundary, by which it adjoins the Circle of Berendt. It is one of the most elevated places in the district, being at a height of about 700 feet above the level of the sea. In its immediate vicinity is the Thurmberg mountain, already referred to.

months of 1863 and 1864 was 12·5, so that the mortality from the epidemic must have been trifling. In the civil hospitals of the town, which at the time of my visit accommodated 320 patients, only 18 cases of cerebro-spinal meningitis had been received (including some of very slight character), of which four had terminated fatally.* It may be conjectured, that about 30 persons had died in the town. The patients who came under my observation in the hospitals, and elsewhere, resided in various parts of the town, within the walls as well as in the suburbs.

Elbing. In the circle of Elbing the epidemic appeared on the 19th of February at Jungpfer and Keitelau, two villages situated on opposite sides of a narrow creek, which communicates with the Frische Haff, about five miles north-west of Elbing. In Jungpfer 14 persons died between that date and the end of March, of whom two only were adults. In Keitelau there were in all five cases, three of which were of adults, who died, and two of children, who recovered. With these exceptions, it was reported that the Elbing district was not invaded.

Stargardt. In the circle of Stargardt cases were reported about the end of February in eight villages, most of which were situated in that part of the circle which adjoins Berendt. In Suhanitzka there were three deaths, one of which was of an adult; two other children were attacked, and recovered. At Lienfitz there had been four cases; in Garczau, nine cases. In the town of Stargardt there had been 27 cases, and 16 deaths. Of these 21 were in different households, the remaining six being divided equally between three families. Of 24 patients, whose ages were known, eight were under one year, nine under six years, three from six to 14, and four above 16 years of age.

Neustadt. In the circle of Neustadt no cases had been reported, excepting in the village of Pogorcz, where two children had died.

C. Description of the Disease.

1. *Summary.*

In adults the disease begins almost invariably with shivering, profuse vomiting, intolerable headache, and giddiness. After these symptoms have continued for several hours the patient's thoughts become confused. The headache continues, while other pains fix themselves in the muscles of the nape of the neck, of the small of the back, or of the abdominal wall. At this part of its progress the malady advances so rapidly that within a few hours after the appearance of the first symptoms the patient becomes violently delirious, while at the same time the head is thrown back, and the thighs are drawn up by muscular contraction. The delirium usually lasts for a few days only. In the worst cases the patient lapses into profound insensibility, which continues until death. In a few rare instances he regains complete consciousness as the delirium ceases, and enters on convalescence. Much more frequently he is left on the third or fourth day of the disease, if he survive its first onset, in a state of extreme nervous depression, which is usually of long duration. This condition is characterized by impairment of consciousness, rather apparent than real, perversion both of common and special sensibility, marasmus, and excessive muscular weakness.

During the continuance of the state of depression the patient is liable to frequent recurrence of the initial symptoms. Although so profoundly prostrate and indifferent to external impressions that he is incapable of replying to questions, he frequently utters piteous cries of pain. At night he sleeps little, usually wanders quietly, and is often subject to hallucinations. At any moment his life may be imperilled, either by secondary affections of the lungs or other vital organs, or by a recrudescence of the primary disease.

As complete consciousness returns, and the patient resumes his relations with the external world, he may either find that in the course of the malady he has become paralysed, or that his sight or hearing is destroyed, or, on the other hand, he may be so exquisitely sensitive that light and sound are intolerable, and all other external impressions painful. Even if he escapes these consequences, he is left in a pitiable state of muscular weakness and exhaustion, from which he very slowly recovers.

The

* Since my return two others of the patients above enumerated have died.

The above description is completely applicable to those cases only in which the tendency to an early fatal termination manifests itself in the violence of the symptoms of invasion. Other cases are met with in which, although the evidences of cerebral disturbance are, from first to last, confined to sleeplessness and night-wandering, the subsequent development of the disease is similar. In these cases, the dangers and liabilities to which the patient is exposed are as serious, and the progress as tedious and exhausting, as in the others.

2. *Premonitory Symptoms.*

In all of the cases observed, excepting two, the onset of the disease was sudden, the patient having been in good health up to the moment that he was seized. In one of the exceptional cases the patient had complained of headache and nausea for some days previously. In the other there had been three febrile accessions of so marked a character as to give rise to the suspicion that she was suffering from intermittent fever.

It usually happened that the patient was suddenly seized while following his ordinary occupations, or at play, with shivering, vomiting and headache. Of these symptoms the first mentioned commonly preceded the others, but in many instances it was not possible to determine in what order they presented themselves. Exceptional cases were met with in which the patient had no shivering either at the onset or subsequently, but in general this phenomenon existed in a very marked degree.

3. *Symptoms of Invasion.*

Vomiting. The occurrence of obstinate vomiting was almost universal. Of 56 cases in my notes in which this symptom was referred to, it was ascertained to have occurred in 51. In the remaining five it was ascertained (by inquiry from parents or attendants) not to have existed, although (in one instance) there was retching and nausea. The vomiting was of the most aggravated and uncontrollable character, the vomited matter consisting at first of half-digested food, subsequently of mucus stained with bile. In adults it recurred at short intervals for several hours, ceasing when the patient lost consciousness; in children its continuance was less definitely limited. Of the five cases in which there was no vomiting, three, although they terminated favourably, were severe, the other two were slight.

Headache. The occurrence of severe headache at the onset would appear to have been almost as constant as that of vomiting. Out of 44 cases it was present in 36. The cases in which it was not recorded were of two kinds. In some of them (see, for example, cases 2 and 4), all of which were of adults, delirium supervened so rapidly that the headache may well be supposed to have escaped notice, while in others the patients were so young that the fact that no indication of pain in the head was observed by the parents could not be regarded as sufficient ground for assuming that it was not experienced. In general the headache of invasion did not appear to be confined to any particular part of the head, in which respect it differed from the pain subsequently complained of, which was always referred to the occiput.

4. *Delirium.*

The period of invasion terminates in perversion, impairment, or loss of consciousness. The patient may either become suddenly delirious, or the initial symptoms may gradually subside, and leave the state of depression already described. Of the cases I had the opportunity of observing there were 12 in which the headache and vomiting of the first few hours ushered in a delirium of so violent a character that it was necessary to secure the patient to his bed. Of these cases three were fatal. In the very rapid case of the soldier Dupré (case 4) the delirium recurred without abatement for three nights (the patient being somewhat quieter during the day), after which he lay absolutely insensible for the remaining 48 hours of his life. The labourer Rahmell (case 2) was also violently delirious for two nights, after which he became insensible and died in a like manner on the fifth day. In the child Bremer (æt. 4) the disease followed the same course much more rapidly. He took ill in the afternoon,

noon, was delirious all night, became comatose in the morning, and died on the day following.* Still more rapid was the history of another child, æt. 7, who was at play at five in the afternoon, began to vomit at six, became delirious at 10, and died comatose at half-past two a.m. In these cases the delirium ceased only to make way for death itself, the coma which supervened being but the commencement of dissolution.

In the cases which terminated favourably, the delirium was of comparatively short duration. In five cases it was confined to the first night, but in two others it lasted longer. One of these patients, a child æt. 9, seen at Gotteswalde with Dr. Scheel, was delirious for three days, suffering at the same time from the usual muscular pains in the nape of the neck and the abdominal walls. To relieve these pains, and to calm the delirium, morphia was given in considerable doses, while, at the same time, leeches were applied to the spine. The patient became tranquil, gradually regained consciousness, and entered on a tedious convalescence, complicated with deafness. In the other case, seen at Dantzic with Dr. Lissauer, the history was similar, but the delirium would appear to have lasted somewhat longer.

Those more numerous cases in which the delirium, if present, was not such as to render restraint necessary, varied considerably as regards the degree in which consciousness appeared to be impaired or subverted. With the exception of those who were moribund, none of the patients were absolutely unconscious, or in a state of coma. With the same exception, there were no instances in which the breathing was stertorous, or the motions or urine were passed involuntarily. The patients could always be roused, and (provided they were of sufficient age, and not affected with deafness) it was always possible to make them understand what was said to them. In short, the mental state of the patient was rather that of extreme apathy or indifference than of perversion, for it was only occasionally, and particularly when he was roused, that he talked to imaginary persons, or referred to unreal objects.

5. *Contraction of the Muscles of the Back of the Neck.*

This impairment of consciousness, whether attended with delirium or not, is accompanied, and often preceded, by that characteristic symptom which in Germany and Sweden communicated its own designation to the disease itself (Nackenstarre, Genickkrampf, Nacksjuka, &c.). The muscles of the back of the neck became the seat of exquisite pain, and, in consequence, the patient, by a half voluntary effort, throws back his head, in the same way as a person affected with other forms of myalgia.

This symptom, which occurs so frequently that it is regarded as the most distinctive characteristic of the disease, no less by scientific writers than by the vulgar, did not present itself in its acute stage in any of the cases in the excessive form in which it has been described by some physicians. No case came under my observation in which the contractions of the back of the neck were of such a character as to be correctly called tetanic. It was almost always observed that the head was thrown backwards, and that the patient complained of agonizing pain in the nape and occiput, but on placing the hand on the trapezius it was generally found that although any effort to straighten the neck was strongly resisted, and aggravated the sufferings of the patients, no tightness could be felt so long as the head was allowed to retain its retracted position.

It was not till the neck was completely extended that the muscles became hard, and even then the hardness was not for a moment comparable with that which is felt in tetanus.

It is of the utmost importance to notice that there were some instances of patients whom I saw early in the first stage of the disease (the day following the delirium), in whom I could not detect a trace of retraction of the head, or of stiffness or anything else remarkable in the muscles. It appears to me not improbable, that if I had seen these children a day or two later, I should have found that the nape pain had developed itself, for in every instance in which I inquired of the parents of children who had recovered, or were recovering, it was stated

* *See* Dr. Drost's case, par. 10.

stated that the symptom had existed during the first few days of the child's illness.

As has been already stated, other muscles, particularly those of the belly and loins, and sometimes of the extremities, were affected in a similar way with those of the nape, so that pain was often complained of as vehemently in the belly and the small of the back, as in the neck. The patients invariably lay on their sides, with the knees drawn up, so as to relieve the abdominal muscles, and with the face looking towards the head of the bed, and excessive pain was produced whenever the body was moved in such a way as to extend the painful muscles, and more particularly when the patient was lifted in bed. (*See* case of Schönrock and others.)*

6. *Apathy or apparent Stupor.*

Its duration.

I find that in 27 cases which came under my observation, the state of apathy, referred to in par. 1, existed in a greater or less degree. The length of time during which the patient remained in this state was remarkable. Thus in six patients of the ages of 12, 17, 9, 4, 22 and 7, in all of whom there was violent delirium at the outset, the patients subsequently remained in a state of complete indifference to external impressions for periods varying from seven days to five weeks, the number of days (so far as they could be ascertained) being in the several cases 35, 24, 21, 17, 14 and 7, giving a mean duration of 19 days; but as no less than four of these patients emerged from their stupor in a state of complete deafness, there was much difficulty in limiting accurately the period of unconsciousness. Of those cases in which the initial symptoms were followed immediately by the state of apathy or depression without the intervention of violent delirium, one of the most remarkable for its duration was that of Anna Beyer, in whom this condition lasted for a period of five weeks, during which the patient was at all times able to answer questions, but frequently talked incoherently, while she gradually became weaker and more emaciated.†

Its characters.

In several children whom I had the opportunity of observing shortly after the cessation of the initial symptoms, the general state of the patient was very similar to that which exists in tubercular meningitis, so much so that I am not able to draw any distinction between them. Thus at the village of Letzkauer Weide I saw, with Dr. Knapp, a child aged five, named Martin Dein. He had been taken ill, on the preceding day at 9 a.m., with pain in the head and vomiting, followed in a few hours by delirium and "convulsive movements." I found the child lying with his eyes half open, squinting slightly inwards (the left more so than the right). When called by name he did not respond, but when raised up uttered plaintive cries; and the pupils, which were contracted so long as he lay quiet, became dilated. The pulse and breathing were frequent (pulse 132, respirations 36), and the former was small and weak; the countenance was pale and the surface hot; the bowels were confined, and vomitting recurred at intervals, especially when the child was moved. A similar case was observed at Dantzic.

In both of these instances the special spinal symptoms were almost absent, but even when the retraction of the head and the localisation of the pain reminded one

* Often the pain in the neck and back seemed to radiate to the extremities. Professor Niemeyer, of Tübingen, whose able report on the epidemic which has prevailed during the past winter in Baden, has been published since the above was written, has referred to this symptom as having existed in a marked degree in one of the cases observed by him at Carlsruhe. (Die epidemische Cerebro-Spinal-Meningitis in Baden, Berlin, 1865, p. 34.)

† A. B., aged six, residing in one of the poorest streets in Dantzic, came under the care of Dr. Lissauer on the 10th of February. It appeared that during the previous week she had had three febrile accessions, each preceded by shivering, which had followed each other at nearly regular intervals of two days, and were accompanied with headache. When Dr. L. saw her she had had a fourth and more severe attack, attended with copious and repeated bilious vomiting, shortly after which the head became painfully retracted, and she passed into a state of apparent stupor attended with tranquil delirium. It soon became evident that her hearing was impaired, for although she could be roused by moving her in bed, she did not answer to her name, and appeared quite insensible to sound. At the same time the usual eruption of herpes labialis broke out about the lips. As the case advanced she became excessively sensitive, so much so that she screamed whenever she was touched, or when light was admitted. She remained in the same state for several weeks, becoming weaker and more emaciated. I saw her with Dr. Lissauer on the 15th of April, when she lay listlessly in bed with her legs drawn up, but the head was no longer retracted. At intervals she uttered plaintive cries, but the irritability above described did not exist. She did not put out her tongue when asked, however loudly, but could be at once induced to do so by signs. Pulse 96; respirations 32; pupils dilated and sluggish; emaciation extreme.

one that the spinal cord was the main seat of disease, the constitutional state and cerebral symptoms were identical with those of hydrocephalus.

Several of the adult patients, whom I had the opportunity of seeing from day to day in the hospital from an early period, were throughout sufficiently conscious to answer to their names and even reply to questions correctly, if their attention was first aroused. The patient, Stroessel, who died on the tenth day without having been violently delirious at any period of his illness, was rational at intervals even to the last, although he almost always wandered and talked to imaginary persons. In Schönrock's case, after the violent delirium of the first day had subsided, the patient remained in an excited state for two days, constantly uttering cries of pain, tearing the cold applications from her head and talking incoherently. The case of Jeschke was in every respect similar as regards the mental state of the patient.

So long as this condition lasts the patient remains in bed, and gradually loses strength and flesh. Restlessness, nocturnal delirium, and muscular pains in the back of the neck and loins are still experienced more or less frequently, so that the disease from first to last retains its painful character. But it is invariably observed that, as regards all these symptoms, its progress is interrupted by marked fluctuations; so that not only the degree of consciousness which the patient manifests, but his constitutional state, as shown by his general aspect, pulse, and mode of breathing, varies from day to day. In some cases the variations are so gradual and insensible that they may escape notice; in others the exacerbations are so marked that they assume the character of relapses. In several children these relapses consisted in the recrudescence of the symptoms of invasion. The patient had rigors and vomiting, headache and fever, followed by delirium, while the pains in the neck and loins returned with all their original violence. After a time these symptoms subsided, but he was left more depressed and prostrate than before. In a few cases the symptoms had recurred with such regularity, at intervals of two or three days, that they were regarded as dependent on malaria and treated accordingly, but in no instance did it appear that quinine exercised any distinct influence in arresting them or preventing their recurrence.* I find that all the cases in which there were relapses were of long duration, but that in general the sufferer was in the way of recovery. One instance, however, was related to me by Dr. Frick, in which a boy, aged three, after recovering from the initial symptoms with no worse results than deafness, had a succession of relapses recurring at intervals during a period of three weeks. After one of these he became collapsed, apparently unconscious, and died in a few hours.

In adults general recrudescence of the disease was not so frequently met with,† but it often happened that there were marked variations in the patient's constitutional state, and especially in the intensity of the pain from which he suffered. In the Charité at Berlin I saw, by the kindness of Dr. Nauyn, a patient in whom during a period of three weeks the exacerbations of severe pain in the head and neck recurred at such regular intervals that the patient could predict their advent. These exacerbations always happened at night, and were markedly relieved by subcutaneous injections of morphia.

7. *Temperature.*

In every case in which I had the opportunity, observations were made of the temperature of the body, by placing a thermometer in the axilla. I found that in all stages of the disease the temperature was high,‡ seldom falling below 100° Fahrenheit. The highest temperatures observed during its progress were recorded while the symptoms of invasion still existed or had just subsided. At that time the temperature varied from 102° to 104°, and in children was still higher. As the muscular pains diminished, and the patient became less restless and more conscious, and the general state seemed to improve, the temperature subsided; and in Dr. Nauyn's case above referred to, in which there were frequent

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* *See* "Treatment."

† *See* the case of Junknischki, No. 5.

‡ This statement is not borne out by the experience of the Baden epidemic. Niemeyer says, "The increase of temperature on the first and second days of the disease is often very inconsiderable."

frequent fluctuations in the urgency of the symptoms, it was distinctly observed that the exacerbations of pain were always accompanied with an increase of the heat of the skin, amounting to 2° or 3° of Fahrenheit.

8. *Pulse.*

As regards the frequency of the pulse, my own observations do not enable me to come to any conclusion, excepting so far as to state that in all cases it was greater than natural. In children the pulse was quick throughout, but the acceleration was greatest during the first few days In adults, in six cases observed in the hospitals, it varied during the progress of the disease from 56 to 98, the average being 85; but in several of these cases it was noticed that its frequency varied considerably from day to day, without apparent relation to the condition of the patient in other respects. The character of the pulse was invariably such as to indicate defect of arterial tension. This was indicated by the smart tap given by the radial artery to the finger, the correspondingly sharp first sound of the heart heard on listening to the chest, the visibility of the arterial pulsation in the neck, and the distinctness with which the second beat of the pulse could be both felt at the wrist, and often seen in the neck. This condition was observed only in patients at the acme of the disease, and appeared to me to be associated with the same general conditions as the increased temperature referred to in the preceding paragraph.

9. *Respiration.*

With respect to the rate of breathing, the same observations apply as to the frequency of the pulse, for within certain limits I was unable to appreciate any relation between the variations observed and the patient's general state. But the mode of breathing was evidently of the greatest importance. In all severe cases, whether of children or adults, the breathing was embarrassed in proportion to the general gravity of the symptoms. This embarrassment was marked by a slow, laboured inspiration, followed by quick expiration and a long pause,—that condition of breathing which is so frequently observed in continued fever (especially typhoid), and is often called suspirous.

10. *Phenomena preceding Death.*

In all the fatal cases which came under my notice, the most prominent symptoms which preceded death were those which indicate impairment and perversion of the respiratory function. As the breathing became more hurried and difficult, the general depression became more intense, the pulse became weaker and quicker, and the temperature of the skin more elevated. The following observation will serve to illustrate these statements as applicable to young children:—On the 20th of April I saw in one of the suburbs of Dantzic, by the kindness of Dr. Drost, a child, aged 4, who had been ill 48 hours. He had been suddenly attacked, on the 18th, with vomiting and the usual symptoms. In the evening delirium came on and lasted till next morning, after which the child became tranquil, but (as the parents stated) unconscious. He lay in the usual position with half open eyes, breathing 40 times in a minute; his countenance was deadly pale and the expression fixed. When disturbed he moaned, and winked when the eyelids were opened for the examination of the pupils. The right cornea was dim and the right iris contracted, the left widely dilated, but neither pupils were in the slightest degree sensible to light. While I observed the temperature of the skin, which was 104·7 Fahrenheit, I noticed that the respiration was becoming more and more rapid, and I found that the pulse, which had before beaten 150 times in a minute, was imperceptible. This acceleration continued up to a certain moment, when the respiration suddenly became irregular and less frequent. Death followed in a few minutes.

In the four cases of adults which terminated fatally in the hospital at Dantzic during my visit, the temperatures observed before death were severally 101·8, 102·4, 102·2, and 101·8. In each the respiration gradually increased in frequency till it attained, in the case of Stroessel, who died on the 10th day, 48; in Rahmell and Dupré, each of whom died on the fifth day, severally 60 and 76. In the case of Boldt, who died on the fourth day, the breathing was not counted, but its

acceleration was similar. The corresponding pulse rates in the three cases first referred to were severally 120, 128, and 124. These facts, combined with the evidences of hypostatic hyperœmia observed after death, afforded ground for the inference that in these instances, interference of the exudation with the respiratory functions of the medulla oblongata was the immediate cause of death.*

11. *Increased Sensitiveness.*

In a disease in which neuralgic pain is the leading characteristic, it need be no matter of surprise that tenderness of all the affected parts should be observed either after its cessation or in its intermissions. All of the practitioners with whom I conferred called my attention to excessive sensibility as a characteristic symptom of the epidemic meningitis, but from the study of the cases in which it was said to exist, it does not appear to me that there is any sufficient ground for regarding this symptom as anything more than a mere consequence or interlude of pain. In accordance with this view, it is met with either in the progress of the disease, or as a harbinger of convalescence. It has been already observed that the intensity of the pain experienced during the progress of the disease is never constant; it invariably intermits, and, during the intermission, all the affected parts are so tender that the slightest movement produces pain. As convalescence is approaching, and the patient gradually awakens out of his apathy, the symptom assumes a more distinct form, and then, for the most part, is described as "hyperœsthesia." It is no doubt a symptom of importance, but scarcely deserves a special designation.

12. *Affections of the Eyes and of Vision.*

Strabismus.

Squinting was observed in 12 cases,† in 11 of which it was internal. In all of the cases excepting one in which observations were made as to double vision, that condition was ascertained to exist. In the exceptional instance there was blindness of one eye.

In seven cases the strasbismus was transitory, not lasting more than a few days; in three cases it was of longer duration, lasting more than a week in one, five weeks in another, and a longer period in a third. In one case its duration was not ascertained. In the twelfth case, that of a child aged 2, who had been ill 11 weeks, and was in a state of extreme emaciation, both eyes were drawn upwards and to the right.

The state of the pupils in epidemic meningitis corresponds closely with that which is observed in tubercular meningitis. I found that in children seen during the first days of the disease the pupils were either natural or contracted, the degree of contraction varying according to the condition of the patient at the time. In those patients who were apparently most insensible, the contraction of the iris was most marked, and then it was observed that as soon as the patient was roused by speaking to him or moving him in bed the pupil dilated. Variations of width often occurred while the patient was under observation, although he had not been disturbed, and no change had been made in the quantity of light admitted. Sometimes it was noticed that one pupil was larger than the other.

In cases of long duration in which there was marasmus and great loss of muscular strength, the pupils were almost invariably dilated. In these instances it was found that they were sensible to light, and that there was no marked impairment of vision. In the case of a child aged 13, in whom this symptom existed to a remarkable degree, the eyes were explored with the ophthalmoscope without result.

Among the most noteworthy of the occasional results of epidemic meningitis are those which depend on acute inflammatory conditions of the eyeball. Two instances of this occurrence came under my observation. On the 12th of April I saw, with Dr. Friedländer, a girl, aged 14, named Zornig, who on the 1st of March had been suddenly seized when at school with pain and contraction of the muscles of the nucha of so violent a character that the head was rigidly drawn back. Soon after delirium supervened; on its cessation the patient remained so restless and at the same time over sensitive, that she could not bear anyone to move

* This view is confirmed by observations made in Baden.—Niemeyer, loc. cit., p. 50.

† Niemeyer makes no reference to the occurrence of strabismus in the Baden epidemic.

move or speak in the room. Subsequently she became deaf, and blind as regards the right eye. On the 1st of April this eye squinted inwards, and sight was impaired to such a degree that she was unaware of a candle held before it. In a short time the deafness subsided completely; vision also improved, and in a week she was sensible of the difference between light and darkness, although unable to distinguish objects. A day or two later she was examined by Dr. Schneller with the ophthalmoscope, who reported that there was synechia posterior, and opacity of the vitreous humour. On the 23d of April vision was still improving.

On the 19th of April I saw with Dr. Scheel, at Schmeerblock, a patient named Dorothea Pasewerk, æt. 12, who had been taken ill on the 28th of February with headache, vomiting, and pyrexia. Soon after delirium came on, and the head was retracted. For the next four nights she was delirious, and in the day usually unconscious. During the fifth night she slept better, and on the following day it was observed that there was iritis. When I saw her, both pupils were contracted and fixed. The left was of irregular form, its horizontal diameter exceeding its vertical. The margin of the iris was indented, exhibiting a jagged and blackened outline. The right pupil was more regular in form, but otherwise in a similar condition. In inspecting the right eye with a strong front light, the pupil presented an opalescent deep-seated opacity, probably arising from alteration of the vitreous humour. The child was entirely unable to distinguish between light and darkness.

During the epidemic which prevailed in Bromberg in 1864, several cases of a similar nature occurred, in which the results of ophthalmoscopic examination were recorded by Dr. Salomon. In a patient, J. P., æt. seven months, iritis existed on the fifth day, with purulent infiltration of the whole pupil, in consequence of which adhesions were formed between the pupil and the capsule of the lens, which did not give way to treatment. In R. T., æt. seven months, iritis did not appear till a later period; it yielded to treatment with iodide of potassium and atropine, but the patient remained absolutely blind. It was found on examination with the ophthalmoscope that there was synechia posterior of a similar character to that described in the case of Pasewerk, with central opacity of the lens, separation of the retina from the choroid, and atrophy of the eyeball. Similar conditions existed in two other cases.

13. *Deafness.*

Deafness was observed in 10 cases, without including a doubtful case in which it seemed possible to regard the apparent deafness as a part of the general state of indifference to external impressions with which it was associated. Of these patients, three were under ten years of age, the rest between 10 and 17. In six of them the affection appeared during the first few days, and in three in the second week. In one case it was not observed till the fourth week.

The deafness was proved to be absolute in the following cases: Edward Baumann, æt. 17, of no occupation, residing in one of the low streets of Dantzic (Kehrwieder Gasse), was admitted into the town infirmary on the 18th of March. His mother stated that he was taken ill on the 14th with headache, thirst, feverishness, and vomiting so urgent that he retained nothing. Soon after he became violently delirious, so that he could with difficulty be kept in bed. At the time of his admission he appeared to be quite deaf, and was still delirious, but the latter symptom soon subsided, and was followed by apparent insensibility. Sometimes he seemed conscious, though deaf; at others he was thought to be comatose. The following notes were taken at the hospital: April 11th. Patient is lying in bed in the usual position, the head strongly retracted, the lower limbs drawn up. His expression is stupid, and he moans with each inspiration, crying "Au weh!" So long as he is allowed to remain on his side there appears to be little suffering, but when he is turned either on his back or face his countenance is distorted with pain, and his cries become agonising. The pain is increased when the trapezius and the muscles on each side of the lumbar vertebræ are pressed upon, all of which become tight when he lies on his back, but the tightness is not felt when he is replaced in the contracted position that he generally assumes. Skin dry, pale and anæmic, temperature 98·4; pulse from 60 to 64; respirations 22; pupils natural, appetite bad; he eats without difficulty when fed with a spoon. He has had leeches applied repeatedly to the nape

—in all 60—calomel in purgative doses, and ice-bags continuously. No indication of hearing can be obtained, although he is evidently conscious. I saw the patient again on the 13th and 14th, and found that he was rapidly emerging from his stupor, and that the pain was much diminished. On the 14th he could lie on his back, and could hear and answer questions when loudly spoken to. His appetite was much improved, and his tongue moist. He continued to progress till the 23d of April, when he was able to raise himself, and could hear well.

On the 18th of April I visited a child named Augusta Gleiss, at Schönbaun, in the Nehrung. Her mother, a most intelligent and well educated woman, stated that she had been taken ill on the 25th of February with headache, vomiting, and feverishness. Soon she "lost consciousness," and remained in bed in the same state for six weeks, after which she became convalescent. At first there was stiffness of the neck, but it soon disappeared. She was observed to be deaf from the second day of her illness. At my visit she was still very weak, and pale and delicate looking, but out of bed. The pulse wss quick (104) and the tongue white and dry. To test her deafness her mother wrote on a slate the words, "Hör doch was ich sagen werde," and then shouted "Augusta" in her ear. There was not the slightest sign of hearing.

At Garczau (Stargardt) I saw with Dr. Frick a child named Augusta M., who was taken ill on the 30th of March with the usual symptons of accession, which were followed by retraction of the head, "unconsciousness," and deafness. After the 10th of April she began to improve, but still suffered from occasional fits of shivering, followed by pain, retraction, and stupor. At my visit I found there was no pain excepting when she was raised in bed, and no stiffness of the muscles. Pulse 130, respirations 32, pupils reacted slowly. To all questions written on the slate, she answered readily, but when the words 'Can you hear?" "Can you read?" &c. are shouted, she only replied, "Ich kann nicht hören."

There were several other cases of complete deafness. In one of the suburbs of Dantzic I saw with Dr. Friedländer a child named Ernestina Samalsky, æt. four years and three months. She had been taken ill on the 23d of March with headache, vomiting, and thirst, which were followed by great agitation (delirium), with cries of pain. After this state had subsided, she remained in a condition of indifference from the 26th of March to the 9th of April, during which period she was not only deaf, but did not speak a word. The following case, related to me by Sanitätsrath Dr. Hildebrandt, was remarkable from the advanced period of the illness at which deafness supervened. A boy æt. 11, the child of wealthy parents, was, on the 5th of March, suddenly attacked with vomiting after premonitory dyspeptic symptoms, which had lasted for several days. After the vomiting had continued three hours, Dr. Hildebrandt was sent for, and found the patient collapsed, his skin hot, his pulse scarcely perceptible, and his eyes deeply sunken. Although he seemed sinking, six leeches were applied behind the ears, and allowed to bleed freely. The child recovered slightly, but remained as if unconscious, with eyes half open, and neck strongly retracted for 12 days, during which the usual cries of pain were uttered, especially when he was moved, or even touched. From this time he slowly regained appetite and strength, but during the fourth week his hearing became impaired, and at the time the case was related to me he was absolutely deaf.

In several instances the deafness, like the other symptoms, appeared to vary considerably from day to day. Thus in the case of Moritz, W., æt. 15 (related in the Appendix), there was at first excessive sensibility both to sound and to other sensations, but on the fourth day his hearing became impaired; in three days more deafness was almost complete, after which he gradually recovered his hearing. In the case of Zornig, already referred to, deafness attained its greatest intensity during the second week, after which it declined. In two cases in which there was absolute deafness at the commencement, there was either complete recovery, as in the case of Baumann already related, or hearing was partially regained, as in that of a boy named Olcheffsky, the child of the schoolmaster at Schmeerblock in the Niederung, who in the fourth week of his illness could hear when loudly spoken to.

As regards the nature of the affection there appears to be good reason for believing that, like the blindness observed under similar circumstances and sometimes in the same cases, it is dependent on inflammatory changes in the organ of hearing itself. Dr. Klebs was kind enough to show me in the Pathological Museum of the Charité at Berlin a preparation of the internal ear of a soldier

soldier who had died of epidemic meningitis complicated with deafness, in which fibrinous adhesions existed between the bones of the internal ear and the walls of the vestibule. Dr. Klebs stated that in the recent state the mucous lining of the vestibule was detached. My attention was drawn by Dr. Lissauer to a case reported to the Medical Society of Nuremberg of a young woman who died of epidemic meningitis on the eighth day, having been deaf from the commencement. Both tympana were natural, but in the left membrana tympani was found a dense white thickening as large as a pin's head. On the same side the lining membrane of the semi-circular canals was distinctly thickened and loosened, and in the anterior canal there were semi-fluid (sulzig) purulent masses.

D.—Post-Mortem Appearances.

I had the opportunity of investigating the post mortem results of cerebro-spinal meningitis in four cases only. Of these one (Case 4) was of a soldier in the military hospital under the care of Oberstabsarzt Kuhn, under whose direction the autopsy was performed, and to whose kindness I owe the opportunity of being present. One was a private patient of Dr. Friedländer (Case 1), while the other two (Cases 2 and 3) were patients in the Marien hospital under the care of Sanitätsrath Dr. Hildebrandt. In the last mentioned cases the examination was performed by myself with the greatest care. The autopsies took place at various periods (from seven to 46 hours) after death. In cases 2 and 4 the previous duration of the disease was five days; in case 3 it was ten days; and in the case 1, 18 days. In all, the lesions discovered were absolutely characteristic of cerebro-spinal meningitis.

In the two recent cases (2 and 4) there was no emaciation; in the other two this condition existed in a degree proportional to their duration. In all there was marked post-mortem rigidity of the extremities, but not of any of the muscles which had been contracted during life. Purple discoloration of the dependent parts was also observed in each instance, while the general surface was pale; in one of the rapid cases (4) the discoloration was excessive, and there were moreover petechiæ of various sizes scattered on the trunk and inferior extremities.

In opening the skull very marked indications of hyperæmia were observed, in the diploe (Case 1) and in the dura mater, the vessels of which bled very freely, while its internal surface was highly coloured and minutely injected. The sinuses were always found full of soft black coagula, but I never observed any "firm fibrinous masses."* In one instance (Case 3) unusually large Pacchionian granulations, which appear to be softened and purulent, projected through the dura mater near the longitudinal sinus.

In all cases the surface of the arachnoid covering the hemispheres appeared smooth, but excessively congested. In those which were most acute (2 and 4) the veins were markedly distended with blood, and there was fine arborescent injection of the cerebral arachnoid. In Case 4, which was protracted, these appearances existed in a less degree, the convolutions being flattened, and the sulci more or less effaced by the distension of the ventricles.

The pia mater was infiltrated with purulent exudation in each instance, but great differences were observed as to its extent and character. It, for the most part, surrounded the larger venous trunks occupying the intergyral subarachnoid spaces over the sulci, but in Case 2 it formed, in some parts, patches under the arachnoid of such extent as to conceal the convolutions. Its consistence and colour varied. In Case 3, in which it was found in much smaller quantity than in the rest, it was semi-translucent and gelatinous, but in the other three it had a consistence approaching that of brain substance, and a whitish-yellow colour. The pia mater could always be easily stripped from the surface of the brain without removing with it any of the grey matter.

On the base of the brain there was also great variety in the extent of the exudation. In Case 1 it extended in a thick layer from the optic commissure to the medulla, covering all the adjacent parts, and enveloping the cranial nerves. In

* Firm fibrinous masses (*derbe Fibringerinnsel*) were found by Dr. Klebs in the longitudinal sinus.—Berliner Klin. Wchnsch., 16 April 1864.

In Case 2 the appearances were similar, but the quantity of exudation was much less, while in Cases 3 and 4 the base of the brain was entirely free, with the exception that in the latter (the case in which the exudation was most abundant on the convexities) it extended from thence into the Sylvian fissures.

On the superior surface of the cerebellum there were patches of exudation in three of the cases. In one of them (Case 3) purulent infiltration of the pia mater extended from the apex of the cerebellum along the venæ Galena continuously to the choroid plexus.

In two of the cases (2 and 3) the lateral ventricles contained scarcely any liquid; but in one of them, as above mentioned, the choroid plexus was soaked with pus, and a quantity of yellow pus was found in both of the posterior cornua. In two cases the ventricles contained an abnormal quantity of liquid. In Case 1, the liquid was turbid, containing flaky masses of purulent exudation, and distended the ventricles very considerably, while in Case 4 it was clear, although stained with blood, and did not exceed one or two ounces in quantity.*

The substance of the brain was of natural consistence in Cases 2 and 4; but in 1 and 3 it was unnaturally moist and yielding. In 3 this maceration was very inconsiderable; but in 1 it was much more marked, especially in the neighbourhood of the distended ventricles. In Cases 1, 2, and 3 the brain was carefully examined, and I can state confidently that there were no circumscribed softenings of the brain-substance (so called foci of encephalitis).† The grey matter immediately under the pia mater was of natural consistence, although it exhibited the products of inflammation when examined microscopically.

The appearances observed in the spinal cord were altogether analogous to those already described. The sheath always exhibited marked hyperæmia, and usually felt distended to the finger. On slicing it open it was invariably found that the vessels of the visceral arachnoid were swollen out with blood, and the whole membrane minutely injected, but that no purulent or fibrinous exudation was contained in the arachnoid sac.‡

Underneath the arachnoid there was purulent exudation in every case; but, as in the brain, in varied both in quantity and extent. In Case 1 it extended from the cervical swelling to the cauda equina, covering the cord completely, although much more abundant posteriorly than anteriorly. In Cases 2 and 3 the cord was covered to the same extent posteriorly, but was almost free from exudation anteriorly. In all three it was extremely abundant on the cauda equina, so that in removing the cord in its sheath from the spinal canal, a quantity of purulent liquid escaped from the cut end of the nerves. The exudation was partly liquid, partly concrete, the subarachnoid space being occupied with purulent liquid, while the arachnoid on its visceral aspect was lined either with a continuous layer of uneven thickness, or with irregular patches of concrete pus. These layers or patches were usually very soft; but in Case 1 they were sufficiently firm to be felt distinctly through the dura mater before it was divided. In Cases 3 and 4 (so far as the imperfect manner in which the cord was examined allowed me to judge) the anterior surface of the cord was free from exudation. In 2 there was none on the interior surface, except at the lower end, while in 1 the whole surface of the arachnoid was lined with an irregular patchy layer of exudation, showing itself in some parts merely as opacity or thickening of the membrane. The exudation did not extend in any case either posteriorly or anteriorly above the cervical swelling.

Microscopical observations.

The microscopical examination of the exudation gave similar results in all the four cases. The solid or semi-solid material with which the cerebral and spinal arachnoid was lined, was always found to consist of cell-like bodies, either adhering to each other so closely that they could not be completely separated, or embedded

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* Niemeyer found that in some cases the inflammatory process extended either through the hiatus Magendii from the surface of the brain into the fourth ventricle, and from thence into the lateral ventricles, or directly into the latter through the fissura transversa cerebri.—*Loc. cit.* p. 22.

† In Niemeyer's cases no yellowish or reddish softenings were found (*loc. cit.*, p. 22); but Dr. Klebs told me that on two or three occasions he had found in rapid cases of cerebro-spinal meningitis foci of inflammatory softening, varying in shade from straw colour to red in the centrum ovale. In each of these cases he had also found indications of recent endocarditis; in more protracted cases there had been white softenings. Dr. Klebs' observations will shortly be published.

‡ Dr. Klebs in one case found bands of adhesion between the opposed surfaces of the cord and sheath.

embedded in a transparent interstitial substance, while the sero-purulent liquid which occupied the spinal sub-arachnoid space, and in some cases the ventricles, exhibited corpuscles and granules floating freely.

The cell-like bodies, although in general resembling pus corpuscles, did not present that uniformity of size and character which is met with in normal pus. They were usually, but not always, of regular circular contour, and varied in diameter from $\frac{1}{3500}$ to $\frac{1}{1200}$ of an inch. Occasionally they exhibited the appearance of an external cell-membrane, but in most instances this could not be made out even in perfectly fresh exudations, as, *e.g.*, in those cases which were examined as early as eight hours after death. They invariably contained numerous granules, some of which were cleared away on the addition of acetic acid. Those which remained were highly refractive, but did not assume any special form or arrangement. The interstitial substance was beset with granules, some of which were albuminous, others fatty. It was most abundant and distinct on the surface of the spinal arachnoid, where it infiltrated the fine connecting tissue and minute blood vessels of the pia mater.

E.—Ætiology.

In estimating the efficiency of various causes in determining an outbreak of disease, it is most natural, and therefore most advantageous, to consider, first, those which relate to the local peculiarities of the district in which the epidemic prevails; and, secondly, those which arise from mode of life, social relations, and other personal conditions.

Climate and malaria.

The only local conditions which appear to me to be of real importance as probably having some share in determining the preference of meningitis for the two localities in which it manifested itself most severely, are those of climate and malaria. With reference to climate, I do not think it possible to disregard the remarkable fact that the neighbourhood of Schönberg not only overlooks the whole of West Prussia and of the southern shores of the Baltic, but that the summit of the range called the Thurmberg, which may be regarded as the centre of the epidemic area in Berendt and Carthaus, is the highest point between the Hartz and the Ural Mountains. I have already shown how long and severe the winter is in this district, and how greatly its climate differs from that of Dantzic itself or of the other adjoining districts near the Vistula, the Nehrung and Niederung. In these districts, although the winter temperature is comparatively mild, this advantage is almost counterbalanced by the exclusive liability to pernicious intermittents consequent on the annual inundations. So that it does not appear to me unreasonable to attribute the fatal character of the outbreaks of meningitis which occurred at Schmeerblock, Jungpfer, Bodenwinkel, and one or two other places in the Niederung, to the depressing general influence of malaria.

As regards personal conditions, it is convenient to distinguish between those which are manifestly common to infected and uninfected districts, and can therefore have no title to be regarded as determining causes, and those of which the operation is more or less confined to the area of the epidemic.

Overcrowding.

Of the first class are overcrowding and want of ventilation and of domestic drainage. The most marked instances of overcrowding were met with in the four-roomed cottages already described at Bodenwinkel, in one of which I found no less than 19 children with their parents inhabiting the four small rooms of which the cottage consisted. In several other villages of the Nehrung cottages of similar construction were observed, which were occupied in the same manner, but it cannot be stated either that in that district there was more overcrowding than in others, or that the overcrowded cottages were more liable to invasion than those of which the inhabitants were less numerous. Indeed, in the instance referred to, only two of the nineteen children had contracted meningitis. It is to be borne in mind that in Germany the evil effects of overcrowding are very much aggravated by the want of ventilation. The stoves which are in constant use give rise to a very inconsiderable removal (and consequently exchange) of air, so that I found that the air of the cottages was almost always pervaded by some horrible smell arising either from cooking, from articles of food, from animals kept in the house, or from the breath and exhalations of the occupants. The want of house drainage and of any appliance for the collection and

Want of ventilation.

Want of house drainage.

and deposit of excreta is another condition which (especially in a marshy district) must no doubt exercise a deteriorating effect on the health of all the inhabitants; but as the evil is universal, as every peasant defœcates in the open air in the immediate neighbourhood of his cottage, it would be absurd to attribute any special significance to the fact.

Diet. On the hills the diet of the labouring poor is unquestionably bad, consisting, as has been already stated, of oatmeal and potatoes, with the addition of a scanty allowance of herrings and salt pork. This evil must clearly tend to aggravate the bad effects of the severity of the climate. But on the wealthy farms of the Niederung, insufficiency of food appears to me to be out of the question, for although the earnings of day labourers are very miserable in winter, the farm servants, who constitute the bulk of the labouring poor, are paid enough to provide for their families where food is so abundant and so cheap.

Contagion. No facts were met with in the course of the inquiry which afforded ground for believing that epidemic meningitis was capable of being communicated by personal intercourse. The following considerations tend towards a contrary inference :—

1. No single instance was related to me in which there was the slightest reason to believe that any communication had taken place between the family in which the first case occurred in any district and one previously infected.*

2. The disease broke out in the two districts of the department of Dantzic, which were eventually most severely visited, so far as can be ascertained, at the same time, viz., about the 15th of January, although these places are at a distance of at least 30 miles from each other.

3. In the populous town of Dantzic, where there are on an average 18 persons in each house, although the disease had existed since February, the total number of cases was very inconsiderable. It is moreover to be noticed that they occurred indifferently in all parts of the town, and that no single instance was met with or heard of in which two persons were attacked in one house; and that although the ventilation of the hospitals is obviously exceedingly defective (as judged by English standards), there was no transmission of the disease from one patient to another.

4. In those families in which more than two children were attacked about the same time, the intervals between the attacks were so short that it could scarcely be supposed that there had been communication from one child to another.

F.—Treatment.

As the treatment adopted by all practitioners was as nearly as possible the same, it was more possible to judge of its effects than it would otherwise have been. Unfortunately, the cases were extremely few in which any of the means used appeared to exercise an appreciable influence in modifying the progress of the disease. In almost every case the practice during the acute stage consisted in the application of leeches or cupping glasses behind the ears or to the temples, in the application of cold to the head, and in the internal administration of calomel in repeated doses of one or two grains.

As local abstraction of blood was invariably combined with the application of cold (ice or snow, whenever they could be obtained), its effects could only be judged of in combination. It was the opinion of all who had had most experience of the disease in its severest forms that no advantage could be hoped for from this

* The opinion above expressed is generally entertained by all the medical profession in Dantzic and the neighbourhood, the only exception that I know of being Dr. Marcuse, of Carthaus. It is also in accordance with the experience of all those who have had the opportunity of observing the epidemics which have prevailed in other parts of Germany. I may refer to Dr. Hüter, of Marburg, Dr. Scheffer, of Nentershause, near Eisenach (where the disease prevailed very extensively last April), Dr. Zuelchaur, of Graudenz (Berliner Klin. Wchnsch., May 1, 1865), Dr. Salomon, of Bromberg (loc. cit., p. 184), Dr. Dotzauer, in the Department of Oberfranken, Bavaria, where there were more than 200 cases last January and February (Die Mening. cereb. sp. Epidem. in Oberfranken: Aerztl. Intell. Blatt, Munich, March 19, 1865), Drs. Merkel and Reuter, of Nuremberg (Vorläufige Bericht über eine Epidemie von Mening. cereb. sp. *Ibid.*, March 26, 1865).

this remedy unless it were adopted while the initial symptoms still lasted, and that if the patient had already lapsed into the state of indifference, and especially if the breathing had the peculiar character described in par. 9 (slow inspiration, quick expiration, and prolonged pause), even though the face might still be flushed, and the skin feel warm, it was already too late to apply leeches. On the other hand, it appeared to be the general result of the experience of those who had seen the disease in its most formidable aspects, that even in cases in which the onset was most violent, free local bleeding during the first few hours, while the patient was still vomiting, might be expected to be attended with benefit, and occasionally produced the most striking results. Thus at Gotteswalde I saw, with Dr. Scheel, two patients (farm servants), who, although they had been taken ill respectively only six and four days previously, were already convalescent. In both these cases the initial symptoms had been immediately followed by delirium, which in one had been of so violent a character that it had been necessary to secure the patient. As the farms at which these men were employed were within a short distance of the doctor's residence, leeches and ice bags had been at hand within a few hours after the symptoms declared themselves. It appeared to be reasonable to refer the favourable result observed in these instances to the promptitude with which recourse was had to the appropriate remedies. My own opportunities were of course far too limited to enable me to form any opinion on the question, but I think that the complete concurrence of opinion among practitioners is sufficient to warrant the statement that, notwithstanding the generally negative results which are observed, leeching, and the application of ice-cold to the spinal cord, is the only mode of treatment by which the progress of the disease is likely to be arrested, and that its utility is confined to the first day, and in some instances to the first few hours after the patient has begun to vomit.

The employment of calomel in frequently repeated doses, varying from gr. j. to gr. iij., was as universal as that of local bleeding. It was given partly as a purgative, partly with a view to its so-called constitutional effects. Its purgative action was promoted by combining it with jalap, or by injections, or by administering at the same time infusion of senna with sulphate of magnesia, or either of these remedies separately.

In cases in which there were periodical exacerbations of pain, especially if they were accompanied or preceded by febrile accessions, it was the habit to give quinine. Although some practitioners thought this remedy useful and employed it in large doses, others were of opinion that the results were negative.

The advantages obtained by the administration of morphia after the initial symptoms had subsided, as a means of calming the restlessness of the patient, of relieving the violent pain experienced in the neck and back, and thus inducing sleep, appeared to be unequivocal, nor did it seem to be attended with any unfavourable effects afterwards. It was given either by the mouth (in doses of $\frac{1}{8}$ to $\frac{1}{4}$ grain), or by sub-cutaneous injection. Of the two methods, the latter seemed preferable.

In the later stages of the disease various vegetable tonics were employed, with which it was usual to combine iodide of potassium, especially in cases in which there was impairment of vision or hearing, persistent muscular pains or contraction, or other indications that the disease had left behind alteration of structure in important organs.

J. Burdon-Sanderson.

26 May 1865.

G.—Appendix of Cases.

Case 1.*

Bertha Roschnitzki, aged three years, under the care of Dr. Friedländer. The child, who resided in one of the suburbs of Dantzic, and was previously healthy, was taken ill on the 26th of March with headache, pain in the back, flushing of the face, and excessive vomiting. When first seen by Dr. F. she was already in a state of stupor, lying on her side with the head thrown back and the legs drawn up. Whenever she was placed in any other position she

History and progress.

* All of the following notes are my own, excepting where otherwise stated. In cases 1, 2, and 3, the autopsies were performed by myself, and in case 4, under my own observation.—*J. B. S.*

she uttered cries of agony. She remained in the same condition until I saw her on the 11th of April. At first, ice had been applied to the nape, and a blister to the ears. Calomel was given in repeated doses, the purgative action of which was promoted by injections. Iodide of potassium was given with decoction of bark, and a liniment containing chloroform, and Ol. Hyoscyami was used to allay the pain in the neck.

State when examined.—Skin pale and flaccid; no eruption; temp. 100, pulse 152, respirations 78; breathing difficult and oppressed. On lifting her in bed, the child uttered inarticulate pitiful cries of pain, and her countenance became distorted; there were no such cries when the vertebræ were pressed upon, nor was any tenderness evinced anywhere. When the child was lifted, the head remained fixed in its original position; pupils neither dilated nor contracted, the right absolutely insensible to light, the left very slightly. There is marked internal strabismus, and both eyes remain open and have a fixed lustreless expression. Tongue moist, coated with white fur, through which red papillæ are visible. On the following day I saw the child again. The dyspnœa had increased, and an eruption of sudamina had appeared on the chest and belly. The child could not take food, and was evidently sinking.

She died on the following morning; shortly before her death her mother stated that she appeared to have become more conscious, and that, although she had not spoken for some days previously, she uttered the word "mamma."

Autopsy, nine hours after death. Present: Drs. Friedländer, Keber, and Lissauer.

External appearances. General surface pale; marked emaciation; rigidity of the muscles of the thighs, none of the trunk or neck; sudamina over the whole surface of the abdomen.

Spinal cord. On exposing the sheath, it was observed that a quantity of purulent exudation-fluid had escaped into the spinal canal at the lower end by rupture of the dura mater. The cord contained in its sheath having been removed and its anterior surface exposed, it was found to be covered with detached patches of exudation of the usual consistency, extending more or less continuously from the cervical swelling to the cauda equina. On turning it over, and exposing its posterior aspect, it was found to be covered to the same extent with a much thicker and more continuous layer. In pursuing the dissection it was found that this layer was firmly attached to the visceral aspect of the arachnoid, but that it lay loose on the surface of the cord, being separated therefrom by a quantity of purulent fluid, which occupied the subarachnoid space.

Brain. The calvarium was remarkably thin and the diploe appeared congested. The external surface of the dura mater was also hyperæmic, and its veins were distended with blood. On dividing this membrane and exposing the brain, the following appearances were noted:—Convolutions much flattened and their surfaces somewhat dry; veins moderately distended; injection of arachnoid not excessive; yellow exudation under the arachnoid was observed in a few intergyral spaces near the longitudinal fissure, and in a few others on the upper and outer surfaces of the hemispheres, not more on one side than the other; but no part of the surface of the hemispheres was completely concealed. On slicing the brain horizontally so as to open the right ventricle, a very large quantity of turbid liquid escaped; this liquid was muddy, not sanguinolent, and exhibited large flakes or masses of concrete pus. The corpora striata and thalami optici, and indeed all the parts forming the floor of the ventricles, were pale and remarkably soft, particularly anteriorly. The third ventricle was also full of purulent fluid, and its walls very soft. On exposing the base of the brain, it was found that the anterior aspect of the pons varolii was covered with a layer of exudation at least an eighth of an inch thick, which was easily dissected from it. This layer extended outwards to the inferior surface of the cerebellum, the central part of which surface it covered, leaving the lateral aspect of the organ uncovered, forwards as far as the chiasma, but not further, and backwards over the anterior surface of the medulla oblongata. On the upper surface of the cerebellum there was also a small patch of similar exudation. The substance of the brain was everywhere pale, soft, and apparently anæmic. The sinuses contained only semifluid black

Thorax. coagula. On opening the thorax it was found that both ventricles of the heart contained black soft coagula, the right in the largest quantity. The lungs were in a natural state, with the exception that the right was hyperæmic throughout and exhibited complete collapse at the base posteriorly. Careful examination showed no trace of tuberculosis. All the

Abdomen. abdominal organs were found natural. The ascending colon and part of the ilium were slit open and found to be healthy but pale.

Case 2.

History and progress. *Johann Rahmell*, farm servant, aged 30, admitted into the Town Infirmary, Dantzic, April 12. The patient was first seen on the 13th, when it was related by his master that on the morning of the day before his admission he was seized with rigors, and soon after with purging. In a short time he became violently delirious, continued so during the night, and was brought to the hospital on the following morning.

April 13.—Rahmell has been furiously delirious during the night; he is now quieter, but will not allow the coverings to remain on his bed. The pupils are sensible to light. The skin is moist, face bedewed with perspiration, and the cheeks much flushed. Patechial spots, not raised above the surface, each about an eighth of an inch in diameter, were seen in considerable number on the trunk, particularly on the belly. He had been ordered decoc. althææ. acid., a tablespoonful every two hours, and 10 leeches had been applied behind the ears.

April 14.—He is in the same state as yesterday, but more tranquil; temp. 102·7, pulse 127 respirations 60. The bowels had not been relieved since his admission, although calomel

calomel and jalap had been given in repeated doses, in all amounting to ʒj. of calomel and ℥j. of jalap.

April 15th.—Rahmell died at 10.30 a.m.

Autopsy, seven hours after death, April 15th. Present: Drs. Häser, Keber, and Wallenberg.

General surface pale, but beset with hæmorrhagic spots everywhere; these were most numerous and of most regular form on the abdomen. There were already patches of post mortem discoloration on the dependent parts. Rigor mortis very marked in the extremities. No stiffness of the muscles of the neck. External appearances.

In opening the spinal canal, the sheath was slightly injured opposite the first dorsal vertebra, when purulent liquid escaped. The dura mater was hyperæmic, and its internal surface minutely injected. On removing the cord and slitting its sheath anteriorly, it was found that there was scarcely any exudation or other change, excepting at the cauda equina, where there was a patch of purulent-looking matter; but on slitting the sheath posteriorly, it was found that from the commencement of the dorsal region to the lower end the cord was completely covered with a layer of exudation of firm consistence, over which the arachnoid could be distinguished, although it could not be separated from it. It was easy, however, to dissect the exudation, or rather the pia mater infiltrated with exudation, from the surface of the spinal cord, which it appeared to leave in a perfectly healthy condition. The substance of the cord was not softened in any part. Spinal cord.

The dura mater was hyperæmic everywhere, its veins being excessively distended with blood. On removing it, the arachnoid was also found to be minutely injected and its veins excessively distended, and underneath it whitish-yellow exudation was seen occupying almost all the spaces between the convolutions of the hemispheres, but in greater quantity in some parts than in others; it was most abundant near the longitudinal suture, and at a distance of 2½ inches therefrom on either side in the line of the coronal suture. It was noteworthy that the quantity of exudation was about the same on either side, and that its disposition was symmetrical. On slicing the brain horizontally, its substance was found to be firm, but its sections exhibited very numerous blood points. The lateral ventricles contained hardly any fluid. The structures forming the floor of the ventricles seemed to be perfectly healthy. The choroid plexus were not appreciably hyperæmic; they contained very numerous cysts. The third ventricle was normal. On removing the cerebellum with the medulla oblongata and the base of the brain, it was found that the pons varolii, the upper end of the medulla adjoining the pons, and the chiasma, were covered with a moderately thick layer of exudation, which, however, did not extend to the fissure of Sylvius on either side. A patch of exudation was observed on the inferior surface of the posterior lobe, where it rests on the tentorium. Brain.

The heart contained scarcely any coagula, a very small quantity of soft black clot being found in the right ventricle, none in the left. The right lung was healthy, excepting that on its posterior surface, near the inferior margin, there was a patch of pleural thickening (not adherent), and that the lung substance was infiltrated with bloody serum at the base posteriorly. The left lung was in a similar state. Thorax.

The liver was healthy, hyperæmic. The spleen weighed 1 lb. 7 oz.; it was very hyperæmic and soft, like a typhus spleen. The kidneys were large, but apparently healthy. The mucous membrane of the small intestines exhibited nothing remarkable, excepting congestion. Peyers patches were in a natural condition. Hæmorrhagic spots, slightly raised above the general surface, were observed here and there on the mucous membrane of the great intestine. Urine taken from the bladder contained a great quantity of albumen. Abdomen.

Case 3.

—— *Stroessel*, porter at a bank, aged 42, admitted into the Marien Hospital, Dantzic, April 6th. The patient took ill at home with vomiting and headache, and went the same day to the hospital. He was first seen on the 11th April, when it was stated, that during the preceding five days he had been in the same condition as then. He had not been violently delirious, but had wandered during each night. The bowels were much confined. Shortly after his admission he had been cupped, and calomel had been given in repeated doses. History and progress.

April 11th.—Stroessel answers questions well, but during the visit began to wander and talk as if to an imaginary person. On lifting him in bed, the head and neck retain their original position, the muscles of the back of the neck feeling stiff. An eruption of herpes labialis* is commencing on the lips, the vesicles being as yet scarcely formed. Temp. 100·4, pulse 76. April 13th.—He complains of pain, referred to the occipital region and extending downwards as far as the seventh cervical vertebra, also of slight tenderness of the extremities. He sleeps tolerably well. The head is more retracted than before, but none of the muscles feel hard except the scaleni. The eruption of herpes progresses, but does not increase in extent. The skin feels natural, as regards moisture and temperature. Pulse 96, respirations 36; breathing difficult, appetite bad; bowels open freely after purgative draught.

* In 14 cases in which the date of the appearance of this most constant symptom of cerebro-spinal meningitis was noted, it occurred in 11 before the 6th day, viz., once on the 1st, twice on the 2d and 3d, thrice on the 4th, once on the 5th, twice on the 6th. Once it occurred on the 13th day, and once in the third week.

draught. To-day a blister was ordered to the nape, and a mixture containing hydrochloric acid. April 14th.—The patient wanders quietly, answering questions correctly, but usually incoherently. He fidgets the bed-clothes, and was observed to mistake one object for another. He has not slept since last night. Lifting him up in bed does not seem to produce much pain, but the head remains rigid as before. His countenance is somewhat flushed and purplish. Temp. 101·8, pulse 120, respirations 48. In inspiration the nostrils dilate, the scaleni and pectorales act strongly, and the larynx sinks deeply. There is dulness of the base of the left lung, extending upwards to the spine of the scapula, and on auscultation bronchial breathing and coarse mucous râles are heard; the right could not be examined. The bowels have not been relieved since yesterday. To-day camphor and benzoic acid have been added to the mixture previously ordered. April 15th.—The patient has slept little, and is in every respect worse. The pupils act sluggishly. As he passed no water naturally the catheter was employed this morning. The skin is bedewed with perspiration; the herpetic eruptions are still visible. Temp. 101·4, pulse 116, respirations 48. The nostrils dilate on inspiration, and there is much laryngeal rattling. The patient is too weak to be examined by auscultation. He was ordered a mixture containing infusum valerianæ and liq. ammoniæ anisatus. April 16th.—Stroessel died at half-past 10 o'clock a.m., no material alteration having taken place in his condition.

Autopsy, 46 hours after death, April 18th. Present: Drs. Hildebrandt and Wallenberg.

External appearances. General surface pale; post-mortem discoloration on the dependent parts only. Rigor mortis of the extremities remarkably pronounced; no rigidity of the muscles of the neck or trunk.

Brain. On removing the calvarium, excessive hyperæmiæ was observed of the dura mater, and much fluid blood escaped from its surface. Surface of hemispheres intensely injected; veins distended with blood, arachnoid covering everywhere opaque; its surface moist. The intervals between the intergyral spaces were occupied by semi-transparent exudation of gelatinous consistence; near the middle line this exudation was firmer than elsewhere, but did not anywhere possess the characters of the firm layer of deposit observed in the other three cases.

On slicing the brain horizontally its substance was found to be very moist, and more or less hyperæmic. The ventricles were by no means distended. In the posterior horn of either ventricle a quantity of notably yellow pus was found. The parts forming the floor of the lateral ventricles and the walls of the third ventricle were firm and healthy. The choroid plexus, although not strikingly hyperæmic, were infiltrated with purulent exudation, and it was found that this infiltration extended through the transverse fissure to the exterior of the brain, where it became continuous with patches of similar exudation on the apex and right upper edge of the cerebellum, the pia mater of which organ was everywhere minutely injected. No exudation was found either on the base of the brain, on the pons, medulla oblongata, or in the Sylvian fissures.

On removing the cord with its sheath (which was very hyperæmic) it was found that the arachnoid covering the posterior surface of the organ was opaque, and that its internal surface was lined by a semi-solid layer of quasi purulent exudation. Under this there was a quantity of almost fluid pus, which formed a layer of one-eighth inch thick over the whole length of the cord, from the bronchial swelling to the cauda equina. On the anterior aspect of the cord there was no exudation whatever, and the organ appeared healthy.

Thorax. Left lung not adherent anywhere. Posteriorly at the base it was excessively hyperæmic and soft; it contained no air, and a portion of it sunk at once in water. The right lung was firmly adherent by its whole surface. At the apex there were two or three small cavities containing greyish puriform fluid, surrounded by masses of old tubercle. At the base posteriorly the right lung was in the same condition as the left, but it was softer (so soft that it could not be separated from the chest wall). Heart natural; the right ventricle contained a very small quantity of soft black clot, the left none.

Abdomen. The spleen was if anything small, but soft and hyperæmic, as in typhus. The liver and kidneys were apparently healthy, but congested. The intestines were examined and found to be healthy; there was no alteration of Peyer's patches.

Case 4.

Carl Dupré, bandsman, aged 19; admitted into the Military Hospital, Dantzic, April 7th.

The following notes were obtained from Dr. Schuenemann, resident medical officer of the hospital:—

History and progress. Dupré, who six months before had had an attack of typhoid fever (abdominal typhus), from the effects of which he was still suffering, first felt ill on the afternoon of the 6th, after partaking of a full meal of fish. He lost consciousness the same evening, and became furiously delirious. On the morning of the 7th he was restless and still unconscious. Shortly before the visit on that day he had had copious bilious vomiting. There was moderate pyrexia, the patient complaining only of severe headache. He was ordered to have ten cupping glasses applied to his neck and spine, and ice-bags to the head.

April 8th.—The delirium continued during the night, and was so violent that two men were required to watch him, and he had to be secured to the bed. He complained of variable pain in the neck, but no contraction of the muscles could be observed. Pulse in the morning 68, in the evening 80; temp. 100·4. The ice on the head was ordered to be continued.

April 9th.—State of patient unaltered, except that the pulse has risen to 100. Six leeches

leeches were ordered behind the ear and and injection, the bowels not having acted. In the evening the pulse was 80.

April 10th.—The state of the patient is much altered. He lies with the legs slightly drawn up, and has occasional twitching of the upper limbs. The pupils are dilated and react sluggishly. Temp. 101·8; pulse 80. He was ordered a blister to the neck and an injection. In the evening his state was the same. Pulse 80.

April 11th.—Much difficulty of breathing. Temp. 104·0; pulse 128; respiration 76. He was ordered a large sinapism to the breast, and four grains of calomel every hour. He died at 4 p.m.

Autopsy, 25 hours after death, performed by Dr. Kühn. Present: Drs. Kühn, Hildebrandt, and Schuenemann.

External appearances. Body of a well-made man, not emaciated. The surface was of natural colour, but a little pale, and exhibited no eruptions. Rigor mortis well marked.

Brain. The calvarium having been removed, the dura mater was found to be excessively hyperæmic. On dividing it and exposing the hemispheres, the following appearances were observed: There was extreme distension of the veins of the pia mater, so that they projected like cords on the surface of the arachnoid; there was also fine arborescent injection on the surfaces of the convolutions, excepting where they were covered by exudation. There was a thick layer of exudation of a pale yellow colour beneath the arachnoid, usually occupying only the intergyral spaces, but in some parts covering the gyri as well. This exudation was observed to be most abundant on the right side in the neighbourhood of the veins, which converge towards the fissure of Sylvius, where it concealed the convolutions; in this situation it was not less than one-tenth of an inch thick, and was of the consistence of brain substance. It was firmly adherent by its external surface to the arachnoid, which could be with difficulty dissected from it. It could be easily separated from the surface of the brain, which it left in an apparently natural condition as regards firmness and colour, carrying with it the vascular layer of the pia mater. After removal of the brain, the ventricles were found to be distended with turbid sanguinolent fluid (the quantity was not ascertained, but amounted at least to an ounce). The cerebellum appeared to be softened, but this was probably attributable to the violence with which it was removed. On its upper surface, on the right side, I observed subarachnoid exudation of the same appearance as on the hemispheres. On the inferior aspect of the brain the same appearances of vascularity were observed as on the surface of the hemispheres, but much less exudation. On the inferior surface of the middle lobe, following the course of the veins towards the Sylvian fissure, there was a deposit of exudation on either side, and in the Sylvian fissure itself the exudation was (on the right side) nearly as abundant as on the upper surface. On the left side there was also much exudation in this situation. On careful examination I found that the central parts of the base of the brain were entirely free from exudation. The blood points appeared to be unusally numerous, but on making sections no trace of softening or other lesion could be discovered.

Spinal cord. The spinal canal was opened as far down as the 7th or 8th dorsal vertebræ. When the corresponding portion of the cord was removed, it was observed that pus escaped from the sheath. On exposing its anterior surface there appeared to be no exudation, but posteriorly the whole surface of the organ was covered with a thick layer of concrete pus, similar and having similar relations to the exudations on the surface of the brain.

Abdomen. The spleen was removed and found to be of natural size, but soft and congested.

The other organs were not examined.

Case 5.

Elise Junknischki, servant, aged 20, was admitted into the Marien Hospital, April 18th. During the two days before her admission she had been feverish, and had complained of headache and pain in the back and loins, which symptoms had been preceded by vomiting. It was stated that she had been delirious. She was first seen on the 20th, when it appeared that since her admission she had been in the same state as before, but that there had been no delirium. She had been twice cupped on successive days, and had been taking calomel in repeated doses.

April 20th.—The patient has not slept, and is much oppressed. The pupils are slightly contracted, but dilate when she is roused. The breathing is embarrassed, inspiration being slow, expiration quick. When she is raised in bed great suffering is evinced, and immediately afterwards the oppression of the breathing becomes greater than before. There is no contraction of the muscles. The cheeks are flushed, and an eruption of herpes labialis has appeared around the mouth. Temp. 103·1; pulse 100, visible in the neck; respirations 22. She was ordered an opiate at bed-time.

April 22d.—The headache is diminished, but there is still pain in the neck and loins; she has scarcely slept. The herpetic eruption has broken out near the inner canthus of the right eye. Temp. 103·8; pulse 96; respirations 24. The tongue is dry and furred, and the gums red and tumid. She has no appetite. Eight leeches were ordered, four to each temple.

April 24th.—The patient complains of pain in the chest and belly, as well as the head and back. Her breathing is still oppressed and hurried; on lifting her in bed the breathing becomes worse and the pain is aggravated. There is twitching of the mouth, the angles of the mouth being retracted and the chin raised at the end of each inspiration. The pupils react. Temp. 103·1; pulse 92; respirations 28. The tongue is still coated, but not so dry. There were three relaxed stools during the night.

On this day (24th) I left Dantzic. Dr. Hildebrandt has since informed me that, after the relapse on the 23d, the patient became progressively worse and died on the 30th.

Autopsy, made by Dr. Hildebrandt.

Under the arachnoid covering the hemispheres there was much serous liquid, but only here and there glutinous exudation. As regards the base of the brain, the exudation was most abundant near the optic commissure and the pons varolii; but the nerves themselves and the brain substance were intact everywhere. The posterior aspect of the spinal cord was covered with liquid purulent exudation, particularly in the cervical and lumbar regions; its anterior aspect was perfectly free.

Case 6.

History. *Josephine Schönrock*, servant-maid, aged 22, admitted into the Marien Hospital, Dantzic, April 9th.—Her illness began on the preceding evening with shivering, headache, and excessive vomiting. Soon after there was great pain in the nucha of the character now existing. When she was admitted, she was so far unconscious as to be unable to give her name or answer questions. Soon delirium came on, which during the night assumed so violent a form, that it was necessary to strap her to the bed. On admission she was cupped at the nape, and on the day following on the temples. I saw her with Dr. Hildebrandt on the 11th at 2 p.m., when her condition was as follows:—She lies on her side in a state of constant agitation, uttering violent expressions of pain. The head is slightly retracted, but it is not possible to ascertain the situation of the pain on account of her extreme sensitiveness and unwillingness to be touched anywhere. Checks flushed, surface warm to the touch. Crops of herpes labialis are observed on her nose and upper lip; pulse 56, very visible, dicrotous, and soft; tongue coated with white fur, moist; bowels much confined. Calomel had been given in frequently repeated doses, until 12 grains had been taken. This morning an enema was administered, after which the bowels were relieved for the first time since admission. April 13th, 8 a.m. —The patient answers to her name, but talks incessantly in Polish, and (Dr. Hildebrandt says) incoherently. She tears off the cold applications from her head, which is drawn backwards, and slightly to one side. With the exception of the scaleni, the muscles of the back of the neck feel soft. No sleep during the night, although ¼ grain of morphia had been given. Skin moist, face slightly flushed; herpes is extending round the mouth, pulse 80, dicrotous; tranquil and sighing breathing; tongue is much coated and dry; bowels open after inf. sennæ. A blister had been applied to the nape, and ice bags to the head. April 14th.—Schönrock has been tranquil since yesterday; slept all night. She complains only of the soreness of the blister, and of a feeling of constriction at the chest. The pupils act well. The skin feels cool, and several new vesicles of herpes have appeared on the nose. Pulse 80, respirations 20, temp. 101·8; tongue moist, still coated. Appetite improving. She was ordered a mixture, containing hydrochloric acid. April 15th.—She complains of headache and pain in the left side. Intellectual state normal. She sleeps well. This morning there is some cough and hoarseness, and loud rhonchi are heard everywhere on auscultation which are found to be referable to the larynx. Skin naturally moist, eruptions as before. Temp. 99·2; pulse 88; respirations 12; tongue coated; bowels regular. An expectorant mixture was ordered. April 17th.—The patient continues better, but the catarrhal symptoms and hoarseness still exist. The complexion is pale, and the herpetic eruption has increased round the mouth, new vesicles having appeared on the lower lip and left cheek. Temp. 97·7; pulse 88, soft and still visible; respirations 16; tongue coated with yellow fur; appetite good, bowels regular. She sleeps well and has no pain except on trying to raise herself in bed. 18th.—She is bettter in every respect; pulse 84; respirations 22; tongue still coated; bowels regular. 20th.—Tongue cleaner; pulse 84. 22d.—The patient continues to improve; pulse 88. 23d.—State as before; pulse 80. 24th.—The patient was out of bed for an hour for the first time.

Progress.

Case 7.

Andreas Jeschke, farm labourer, from Marienwalde, near Dantzic, aged 26, admitted into the Town Infirmary, Dantzic, April 9th. The day before his admission he was affected with vomiting, which lasted the whole day, and with pain in the limbs, and shivering. Towards evening he became furiously delirious, so that it was necessary to secure him. This condition continued for two days, during which time he appeared to suffer from severe pain in the head and loins.

Progress. April 11th.—The patient wanders, but answers questions correctly. He complains of vertical headache, but not of pain elsewhere. He is still strapped to his bed. The pupils re-act naturally. The conjunctiva of the left eye is tumid and injected. Skin moist, moderately warm; cheeks intensely flushed. An eruption of herpes exists all round the mouth, the vesicles being already turbid. Temp. 102·6; pulse 127, respirations 40; breathing embarrassed, the sternomastoids acting in inspiration; appetite natural; bowels regular. After his admission the patient passed urine involuntarily. The catheter has been used since. On auscultation and percussion the thoracic organs were found to be healthy, and the splenic dulness natural. Ice had been applied to the head, and the following mixture ordered, of which two tablespoonsful had been taken every hour:—

℞. Morphiæ Acetatis
Extracti Belladonnæ āā gr. j.
Aquæ destill. ℥ vj.
Misce fiat Mist.

April 13th.—The patient is occasionally delirious, but answers questions when his attention is arrested by addressing him loudly and earnestly. He has slept very little. He complains of

of headache and pain in the neck and loins, and cries out lustily when he is lifted in bed. One or two new vesicles of herpes have appeared. Temp. 100·5, pulse not noted, bowels regular. April 14th.—He still slightly wanders, but answers questions for the most part correctly. When he is raised in bed, he appears to have great pain in the neck, crying out agonizingly, "For God's sake, let me go!" During the visit he called loudly for an individual who was not present. The pupils act well. Pulse 96, respirations 34. Ice bags have been applied to the head, and the same mixture continued.

April 15th.—The patient appears generally worse; he is in quiet delirium, but answers questions. His arms are secured to prevent him from tearing the ice bags from his head. Pupils natural; the injection of the conjunctiva is increased; the eyes squint slightly inwards. Temp. 99·8, pulse 96, respirations 32. The tongue is dry in the centre, furred on both sides; urine albuminous; bowels not relieved.

April 17th.—Jeschke does not wander so much as before. The pupils re-act naturally; skin dry; tongue coated with yellow fur. Temp. 100·7, pulse 98, respirations 38. The urine contains much albumen.

April 20th.—He still improves, and is quite sensible. He complains of pain in the loins. Pulse 100, respirations 40. Appetite good. Tongue dry and still brown in the centre. The urine contains much albumen.

April 22d.—The patient can lift himself in bed without pain, and sleeps well. Pulse 92, respirations 36. Tongue nearly clean.

April 23d.—Pulse 92, respirations 32. He still improves.

Case 8.

—— *Barthels*, tin-plate worker, aged 17; admitted into the Marien Hospital, Dantzic, April 10th.

History. The illness began on April 8th, with shivering, headache, and vomiting. He was first seen on the 11th, when it appeared that he had had much pain in the occipital region and had been slightly delirious. Four cupping glasses had been applied to the nape.

State and progress. April 11th.—The patient wanders slightly, with occasional cries of pain and great restlessness. The face is flushed, and an eruption of herpes labialis is commencing; temp. 102·6, pulse 96, respirations 24, breathing suspirious. Just before the visit he lost four ounces of blood by bleeding from the nose. The cupping was repeated, and at the patient's request ¼ grain of morphia was ordered at bed time.

April 13th.—He slept little, but quietly, during the night. He still complains of headache, and holds his hands on his forehead. In changing the position of his head he lifts it with his hands. Since yesterday he has squinted inwards, and on testing him with the fingers he was found to see double. The pupils are sensible to light. The eruption of herpes is extending to the nose; temp. 102·6, pulse 94, respirations 36; appetite slight, much thirst; bowels open once after a senna draught.

April 14th.—Yesterday Barthels had another attack of epistaxis amounting to three ounces, since which he has felt better; the strabismus has disappeared. Although still suffering from pain, he can move his head without using his hands. The slight stiffness of the muscles of the neck, which was observed previously, no longer exists. Skin natural; temp. 101·4, pulse 96, very visible in the neck, respirations 12, breathing suspirious, with prolonged pause between each respiration and its successor. The heart's impulse is very visible; and the first sound loud. Appetite good; bowels not relieved since yesterday. He was ordered ½ grain of morphia at bedtime, and aqua chlori * *ad libitum*

April 15th.—He continues better; complains of pain in the small of the back, but thinks that the pain in the neck and head has been diminished. When he is lifted up he becomes giddy, and the head remains stiff, as if the cervical vertebræ were anchylosed. He sleeps little, but there is no wandering. Skin moist and of natural colour; temp. 100·2, pulse 96, respirations 22, breathing still suspirious. Appetite good; bowels have acted twice after inf. sennæ.

April 17th.—The patient has slept better; he has no pain, except on attempting to get up in bed; temp. 98, pulse 84, respirations 22.

April 18th.—Still improves and is reading a newspaper; pulse 72, respirations 14.

From this time convalescence progressed until April 24th, when he was able to leave his bed for a few hours.

Case 9.

Moritz, W., aged 15 years, a strong and healthy boy, came under the treatment of Dr. Abegg (to whom I am indebted for the following notes) on the 10th February, having taken ill the day before with violent shivering of two hours' duration, followed as it was stated by excessive headache, repeated vomiting, and continuous contraction of the muscles of the nape and back.

Feb. 11th.—Great restlessness; skin feels hot; respirations 20, pulse 127; full. He was ordered to have six leeches applied behind the ears, and bags of ice to the head; purgatives and enemata were also prescribed.

Feb. 12th.

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* The aqua chlori of the Prussian Pharmacopeia, which is extremely dilute.

Feb 12th.—Vomiting has ceased; increased restlessness; delirium; violent pain in the nape, loin, and small of the back; great sensitiveness when the vertebræ are pressed upon. Hyperæsthesia of all the extremities; the patient cries when anything is said in the room, or any other noise is made, or when much light is admitted; the pupils re-act well; pulse 124; bowels not relieved; he was ordered to have 20 cupping glasses applied to the nape and along the spine, and to take two grains of calomel, to be repeated after three hours.

Feb. 13th.—The patient is furiously delirious, but recovers consciousness when earnestly and loudly spoken to; hearing appears improved; no sleep; bowels have acted twice. The application of ice to the head was continued, and he was ordered two doses of calomel, each of four grains.

Feb. 14th.—During the preceding night the patient did not sleep and was very restless. Skin feels hot; pulse 120; eight leeches were applied to the temples, and six grains of calomel with a scruple of jalap were ordered to be taken every three hours. In the evening the patient had slept; the bowels had not acted; respirations 19, pulse 116. An injection was ordered, and a quarter of a grain of morphia at bed-time.

Feb. 15th.—He was restless during the night; bowels acted three times. In the evening he was quiet, having slept during the day; the opisthotonos had ceased to exist; only pain remained.

Feb. 16th.—General weakness and pallor; the patient is sometimes quiet, sometimes excited, delirious; he is almost completely deaf. Respirations 28, pulse 128, soft and compressible. He was ordered one grain of sulphate of quinine every two hours. In the evening, pulse 120; fuller.

Feb. 17th.—Since 11 p.m. the patient had been constantly restless, and had complained of headache. Pulse 108, respirations 28. He was ordered blisters to the nape, and to take half a grain of opium every two hours; the application of ice to the head was continued occasionally.

Feb. 18th.—The patient is perfectly conscious, but hears with great difficulty; pulse 108, respirations 28; bowels have acted. A grain of opium was ordered to be taken at intervals of four hours during the evening and night.

Feb. 19th.—He has slept tolerably well, and is perfectly conscious; pulse 108, respirations 26. The opium was discontinued and phosphoric acid given. In the evening, pulse 120, respirations 28.

Feb. 22d.—He is conscious, but still nearly deaf. He has had purging since morning, for which he was ordered bi-carbonate of soda with ipecacuanha in cinnamon water.

Feb. 24th.—Opisthotonos has re-appeared, but in a less degree than formerly; he is more sensitive.

Feb. 25th.—General state the same; tongue dry and red. He was ordered five grains of quinine with phosphoric acid every two hours.

Feb. 28th.—Opisthotonos disappeared; bowels act only after enema. During the last five days an attack of shivering has occurred each day. The attacks have taken place at the following hours, viz., on the 24th and 25th at half-past three in the afternoon; on the 26th at 9·30 p.m.; on the 27th at 10·30 p.m.; and on the 28th at midnight.

March 1st.—Pain in the nape and back; tongue slightly coated with white fur; pulse 108. Five grains of quinine were ordered to be taken daily in the afternoon, and a grain of opium at bed-time.

March 5th.—For the first time the patient had no shivering; the quinine was discontinued.

March 16th.—During the preceding night and this morning the patient again shivered, and vomited three times; pulse 108. He was ordered to take Selter's water *ad libitum*.

March 17th.—In the morning the pulse was 80. In the afternoon there was a violent attack of shivering, with increased headache and pain in the back, and great hyperæsthesia of the lower limbs down to the toes; pulse in the evening 120. He was ordered a grain and a-half of hydrochloride of quinine with 1-12th grain of morphia every three hours; 24 cupping glasses to be applied to the nape and spine, 16 to be without scarification; ice to be applied to the head.

March 18th.—The patient slept quietly during the night, and does not complain of much pain. There has been no shivering nor vomiting, but the skin perspired freely; pulse 76; bowels have not acted for the last 36 hours.

March 20th.—General state satisfactory; perspiration increased; pulse 96.

March 21st.—The deafness, which was before almost complete, appears to decrease; pulse 80; respirations 16.

April 12th.—The patient is convalescent, but is not able yet to leave his bed, from excessive weakness and wasting of the limbs. His hearing improves gradually.

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Saturday, 6th July 1861.

PRESENT :

THE RIGHT HON. LORD STANLEY, M.P., IN THE CHAIR.

Sir PROBY CAUTLEY, K.C.B.
Sir RANALD MARTIN, C.B., F.R.S.
J. B. GIBSON, Esq., C.B., M.D., D.G.A.M.D.
JOHN SUTHERLAND, Esq., M.D.
WILLIAM FARR, Esq., M.D.

Dr. HUGH FALCONER examined.

M.D.

5390. (*Chairman.*) Will you be good enough to state how long you have resided in India ?—I was upwards of 25 years in the service, furlough in England inclusive.

5391. You were lately, I believe, in charge of the botanical gardens at Calcutta ?—Yes, I was superintendent ; and in the previous part of my service I was superintendent of the botanical gardens at Saharunpoor, in the north-west provinces.

5392. You have paid some attention, I think, to the geology as well as to the botany of India ?—I have.

5393. Have you ever considered the question of how far the geological formation of the country affects the health of the persons living in it ?—It strikes me that it is not so much a question of geology as one of the physical configuration of the country ; and that the mere nature of the rocks, or the abstract geological conditions, have but little to do with it. I am not aware that any attention has been paid to the rock formations in reference to the sanitary condition of the country.

5394. When you say that the configuration of the country is important in a sanitary point of view, you include in that, I presume, the nature of the soil ?—The nature of the soil, and the slope of the great lines of drainage. Suppose that in a tropical country, there is a great river valley with different measures of inclination along different portions of its course, you will have different sanitary conditions at different points ; near the delta, where the water flows slowly, and where there are large alluvial deposits, you will have a very different sanitary condition there from what you will find near the head of the valley, where the inclination is considerable and the drainage good.

5395. Taking first the question of drainage, I suppose that, as a rule, the drainage is worst near the mouths of great rivers ?—Yes, as a general rule. In the delta of a great river like the Ganges, or Bramapootra, it is with difficulty that you can have good drainage, from this simple circumstance, that the mean level of the country and of the delta is hardly elevated above the level of the highest tides. I have known the superintendent's house in the botanical gardens at Calcutta completely surrounded by water. The way in which that is remedied, for the sites of houses in the delta of the Ganges, is by digging tanks and throwing the earth taken out upon the surface ; for instance, about Calcutta the general depth of the tanks is about 17 feet, and if you dig a tank of the extent of an acre, you can raise the same area either 17 feet high above the level of the flooding, or you can elevate 17 acres a foot high. That is the way in which a considerable portion of the surface of Calcutta has been raised above the level of inundation.

5396. (*Sir R. Martin.*) Except the river banks, which are raised by gradually silting up ?—Yes ; that is the case in all river valleys. You have invariably on the margin a little higher elevation than you have inland.

5397. (*Chairman.*) The tendency is towards the mouths of great rivers, as in Holland and in Louisiana, for the water to be slightly elevated above the level of the land ?—Yes, and good drainage for houses becomes

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difficult. The only way then is by raising the land, in order to get an inclination upon which drainage can be established. That is, in a great measure, the condition of the inhabited parts of the delta of the Ganges near Calcutta. Among the natives, whenever a man acquires a little money, the first thing that he does is to dig a tank in front of his house, in order to raise the ground and make himself comfortable.

5398. (*Sir R. Martin.*) In the area of Calcutta there exists a sufficient fall eastward into the salt water lake for drainage, does there not?—I am not sufficiently acquainted with the precise hypsometrical details of the case at the present moment to give an opinion. I am addressing myself more to the general question than to special topographical conditions; but it does not in the least interfere with the general law. For the "Salt Water Lake" is merely an inland portion of the network of lagoons and creeks that form the water system of the Soonderbuns of the delta. It is subject to the ebb and flow of the tide, and forms no exception to the general rule. It can be shewn that the soil around Calcutta is only a comparatively modern acquisition from the delta, and that there is no natural cause by which it could have been raised much on one side more than on another, except the circumstance to which you refer, that is to say, the elevation which takes place near the margin of the river from the outpouring of the silt more than in the interior. This will account for a slight amount of inclination towards the Salt Water Lake.

5399. (*Chairman.*) I presume that the same causes which affect drainage also affect the water supply?—They do; but I am not of the opinion that water should necessarily be bad by reason of its being stagnant; for when you get a proper balance of vegetable and animal life, in still water, there is no natural condition required to keep that water sound and fit for consumption. So much is this the case in Bengal, that the natives prefer the water of ponds or tanks the surface of which is covered by a crust of *lemnæ* (species of duckweed). There are strong prejudices on these points in England, but the opinion among the natives in India is very different; practically, it is chiefly water of this kind that is used by the inhabitants of the delta of the Ganges: that water filtered will be found to be of a pure quality in every important respect, clear, and with a fair proportion of oxygen, in fact with the principal conditions which go to constitute good and wholesome water.

5400. (*Sir R. Martin.*) On the contrary, the presence of the animal and vegetable matter go to purify the water?—Yes, and to prevent that kind of unsoundness which would arise from the simple fact of stagnation.

5401. (*Chairman.*) Then do you think that the water consumed in the neighbourhood of Calcutta is generally good?—I do. There are, of course, differences in that respect; but I consider that it is generally good, and that it is difficult to believe that the mere water, as an article of consumption for drink, is the cause of an unhealthy condition, judging from observed facts and from the experience of ages.

5402. (*Sir R. Martin.*) Where the tanks are filled with rain water, the water is sure to be of good quality, is it not?—I do not know that; it will depend upon the washing in of the surface, and upon the nature of that surface. If decayed vegetable matter, or animal *excreta*, were thrown out on the surface, and the rain drainage took that direction, the water of the tank would be tainted and unwholesome. The tanks which the Europeans generally have access to are very seldom of that kind; but my remarks have more reference to the habits of the natives in the villages of Bengal, who commonly drink water, not out of what we call a tank, but out of ponds covered with a crust of vegetation.

5403. (*Sir P. Cautley.*) Your evidence conveys the notion that these tanks must be perfectly free from the drainage of the country near them?—Quite so; they are free from anything in the shape of

obvious decayed vegetable or decomposed animal matter running into them. If any condition of that kind were to take place, the equilibrium would be immediately upset.

5404. Therefore, where you have running water in the upper regions of the valley, you are more likely to have good water, and with less care?—Clearly so, for you have then got a general good condition, from the fact of its being running water; the act of running brings it so much in contact with the atmosphere, that you have there good water provided without any other natural provision.

5405. (*Dr. Gibson.*) Do the troops generally obtain their supply of water from tanks?—They do generally; but the conditions vary very considerably, according to position. In the north-western provinces good well water is procurable in abundance at many stations, in addition to the supply from tanks. Looking at the large map on the wall, the great valley of the Ganges, with its vast population, differs materially in this respect at different points. You might divide it into sections, and each would constitute a belt, with conditions more or less distinct. Where the rivers near the head of the alluvial portion of the valley begin to turn eastward, after escaping from the Himalaya, the elevation is 1,000 or 1,100 feet above the level of the sea, the soil is arenaceous, the inclination considerable, and the current strong until you get to Allahabad, thence it gradually diminishes till you approach the delta and the belt of inundation, where the inclination is almost nil, and the soil a fine alluvial silt.

5406. (*Dr. Farr.*) You say that you might divide the valley into five or six sections?—I am not prepared, on the spur of the moment, to define the precise number of sections into which the great valley of the Ganges might be divided, along a stretch of 1,000 miles, in reference to the subject of the question; but you might mark off four or five, say four belts. The first or lowest would include the immediate delta of the Ganges, or about 240 miles from the apex of the triangle to its base.

5407. Up to what point would you carry the next division?—I am not prepared to give an answer offhand; but upwards from Allahabad, where the two rivers join, the physical conditions, as regards climate, soil, and drainage, differ very materially from those of the delta and lower provinces. The difference is as great in many respects as if they belonged to two distinct geographical regions; the physical characters of the inhabitants differ, and the food they eat differs. In the one case there is a puny or comparatively feeble race who subsist chiefly on rice; while in the north-western provinces the population consumes but comparatively little rice, and they are a more muscular and powerful race. The contrast increases as you proceed northwards through the Punjaub towards the Indus.

5408. All these circumstances, you think, are likely to affect the health of troops?—Clearly; and there are some remarkable facts which might be cited in illustration; for instance, during the early operations in Clive's time—Major Kilpatrick came round to Calcutta from Madras in 1756 with a reinforcement of 230 Europeans; the following year, after a lapse of 13 months, Major Kilpatrick died, and it was found that there were then only five men left alive out of the whole force which came round with him, their service having been on the delta and adjoining provinces, (*vide* Broome's History of the Bengal Army, vol. i. p. 185).

5409. It was as fatal as the west coast of Africa now is?—Yes; the deaths were nearly 98 per cent. in 13 months, and I am not aware that any mortality on that scale has ever been observed in the north-western provinces; but it must be at the same time remembered that the intemperate habits of the soldiers, exposure, bad housing, sleeping close to the ground on mud floors, and deficient medical comforts, &c., greatly assisted the effects of climate and service-casualties in effecting such a mortality.

5410. Does your observation lead you generally to say that the unhealthiest parts of any country are the delta of large rivers?—Yes, in a level country; but in tropical and sub-tropical regions, contracted deep transverse valleys, covered with forest within the mountain ranges, and shallow longitudinal valleys outside them, are also most unhealthy.

5411. The organic matter is first washed down by the rivers, and upon the delta undergoes decay?—Yes, it is there spread out on the surface by inundation, it undergoes decomposition, and that decomposition is always concurrent with a malarious condition of the country.

5412. Are you aware whether any estimate has been formed of the amount of matter that is washed down the valley of the Ganges?—An estimate, founded on carefully observed data, has been made by the Reverend Robert Everest, which appeared in the Journal of the Asiatic Society of Bengal (vol. i., June 1832, p. 238). During a year he made a continued calculation of the quantity of sediment brought down by the Ganges opposite Ghazipur in the different seasons of the year,—rains four months, winter five months, and summer three months. He ascertained that from June to September the average discharge of water was about 500,000 cubic feet per second, and for the remaining eight months somewhat less than 60,000; that, during the former period, the average quantity of solid matter was by weight $\frac{1}{428}$ or $\frac{1}{856}$ in bulk. The sediment during the other months was comparatively insignificant. This is the best calculation that has yet appeared in the records of science of the amount of sediment transported by a great river.

5413. (*Sir P. Cautley.*) He has refuted Reynell, has he not?—He has corrected Reynell, who gave a very extravagant calculation, showing that the quantity of sediment carried down by the Ganges during the rains was so great that if you took up a tumbler of that water, about one quarter of the bulk consisted of mud. This was universally accepted by men of science on the strength of Major Reynell's great reputation, but Mr. Everest applied himself to the investigation of the subject afterwards with great severity, and he arrived at results which have been considered extremely valuable.

5414. (*Dr. Farr.*) The cholera originated about this part of the delta (*pointing to the same*), did it not?—I cannot at the moment quote the very place; but the great epidemic, I think, broke out at Jessore, to the east of Calcutta.

5415. (*Chairman.*) With what parts of the country are you the most familiar?—I know more or less of the valley of the Ganges, from the delta up to the foot of the mountains. I have crossed the Punjaub to the salt range; I have been in Lower Affghanistan; I have crossed the Himalayas to the sources of the Ganges; I have been in Cashmeer and Western Thibet; I have been a ~~very great~~ good deal in the Himalayan mountains, between the Indus and the Ganges, and along the outer ridges from the Ganges to the Kalee; I have been through the forests of the Tenasserim provinces.

5416. (*Sir R. Martin.*) Are you acquainted with the valley of the Brahmapootra?—Not from personal observation.

5417. (*Dr. Farr.*) The different parts of this immense country differ very much in temperature, meteorology, and food, do they not?—Yes, they differ very much in their climatic conditions.

5418. Will you have the goodness to state broadly what the circumstances are which you think would be likely to influence the health of troops in the lower part of the Ganges and in the upper part, and whether you think the latter is more likely to be healthy than the lower part of the Ganges?—The physical condition that seems to me to tell most, after mere temperature, upon the health of European troops, is the annual fall of rain, and the hygrometrical condition of the atmosphere; that is, putting the subject in a very

broad form of expression, temperature first, and then humidity; and where you can reduce the temperature, and at the same time get a concurrent condition of dry atmosphere in India, in that direct ratio, will you, as a general rule, increase the healthiness of the climate for Europeans.

5419. (*Chairman.*) The drier the climate is the more healthy it is?—The drier it is, concurrently with a diminution of temperature, and that has been shown, in some cases, in a very marked manner.

5420. (*Sir R. Martin.*) To what instances do you refer, with regard to locality?—Wherever you cross the Himalayah mountains, and get upon the northern side of the chain. There is a remarkable physical condition which prevails over India during the south-west monsoon, namely, an atmospherical current which is charged for four months to saturation with moisture, conjointly with a high temperature. This current is intercepted by the Himalayah mountains, and forced to ascend, when it necessarily cools down, and heavy continued rains fall all along the southern side. But when you cross the chain to the northern face this condition ceases, the moist current is arrested, and periodical rains cease to fall. I have stood on a high ridge of the Himalayahs between Cashmere and the plains, and seen it raining a deluge upon the Punjaub, while not a drop of rain had fallen on the northern side for months. In the upper part of the valley of the Sutlej, in Kunawur, and more especially in the valley of the Spitee, where very little rain falls, and where you have a cool and dry atmosphere conjoined, a European maintains as good health as in any part of Europe. On the other hand, when you cross to the southern side you may have the condition of a low temperature, but concurrent with a protracted fall of heavy rains, and charged humidity of the atmosphere, when the climate ceases to have the same salutary effect.

5421. (*Dr. Farr.*) Is there a considerable extent of country so favourably placed as you have described?—A large extent of country; in fact all the great valley of Thibet; but you would not find it suitable in other respects, nor advantageous for maintaining a body of European troops.

5422. Is the country fertile?—No; it is not fertile, but the reverse.

5423. Then you could not feed troops there?—You might feed a certain number, but I should consider it highly impolitic; it would be like having troops to garrison a town, and locating them 100 miles off from the garrison.

5424. (*Chairman.*) They would be within the limits of India, but at an enormous distance from the points at which they could be made available?—Precisely; they would be far away from the specific spots where they were intended to serve.

5425. (*Dr. Farr.*) That is, if they were placed in the particular localities to which you have referred?—Yes, where the conditions are most favourable, and where you have a low temperature, and a dry condition of the atmosphere. But when you come to the southern side of the Himalayahs you will find many spots which are recognized to be favourable, but not to the same degree, which have got a low temperature, but concurrently with long periodical rains and great humidity.

5426. (*Sir R. Martin.*) Owing to their forming the front ranges of the mountains?—Not merely that, but the *low* ranges; they are within the belt of elevation which is affected by the monsoon. The south-west monsoon is a stratum of atmosphere having a definite altitude, less than 15,000 feet; for if you ascend in the Himalayah to 12,000 feet you have heavy periodical rains; but go up to 15,000 feet, and you are entirely beyond them; indeed, in some parts of Thibet a shower of rain has seldom fallen within the memory of man during the south-west monsoon.

5427. (*Chairman.*) But I presume that snow falls there?—Yes; on the high ridges and elevated steppes, as occasional falls of snow, or, in the valleys, as rain, during the winter season, but not synchronously with

the south-west monsoon. In the valleys cultivation is mostly restricted to the patches that can be irrigated by rills of melted snow. These remarks refer to the Thibetan regions on the northern side of the Himalayahs.

5428. (*Sir R. Martin.*) The objection to the front ranges of mountains has been, that they bear the brunt of the south-west monsoon, as in Assam?—Yes, as in the Khasia hills ; but the conditions become more favourable as you go towards the north-west. Taking Cherrapoonjee and Sylhet, the conditions there are most unfavourable as regards moisture. They are less so at Darjeeling, and as you go westward they continue to improve, the fall of rain diminishing.

5429. But even in Assam, where the rains are so heavy as to be counted by fathoms, there are behind the front ranges, others in which the rainfall is very moderate ?—Yes ; it is a mere question of elevation above the sea and position. When the stratum of monsoon atmosphere is driven against mountain ridges it gets squeezed out, so to speak, like a sponge, and protracted rains fall. More inland there is still great humidity, with less rain, and when you cross the chain and get to the other side, there is a perfectly different condition of things.

5430. (*Dr. Farr.*) The being squeezed like a sponge is a figure of speech; you mean that the cold forces down the vapours?—Yes; the cold precipitates the vapour in rain.

5431. There is a range of hills, at a very low temperature, and that precipitates all the vapours ?—Yes, a range of lofty mountains, which arrest the current, force it to rise, and thus cool it down. The atmosphere is no longer capable of holding the same measure of water in suspension, and the moisture is precipitated. But for the Himalayah mountains the physical condition of India would be very different ; the mean temperature of the whole continent would be lower, and that of China higher. It is the interference of this enormous lofty axis, arresting the monsoon, and intercepting the interchange of atmospheric currents, that is the great cause of the physical difference between China and India.

5432. It cuts off the monsoon, and brings down rain ?—Yes ; it prevents the current from getting across and spreading over that part of Asia which lies on the other side of the Himalayahs. The effect is very remarkable. There are some Himalayah stations, such as Mussourie and Landour, at an elevation of from 6,000 to 7,000 feet above the sea, which have a mean temperature of from 8° to 12° in excess of what they ought to have, calculated theoretically, for the latitude and elevation ; while Saharunpoor, in about 30° north, and 1,000 feet above the sea, has a mean temperature as high as that of Canton, which is 8° further south, and at the level of the sea.

5433. (*Dr. Farr.*) Is a good account of the rainfall in the different parts of India to be found ?—Not in a separate form ; but good data for a general account exist in observations made at different stations, which are to be found distributed over the Indian scientific journals and in other works.

5434. Showing the rainfall in different months of the year, and for a succession of years?—Both for the months, and in many cases for a succession of years.

5435. Could you supply a table of that sort ?—I have no detailed table of the kind prepared ; it is simply a matter of compilation, and could be prepared in the statistical department of the India office.

5436. Is Berghauz's map tolerably accurate ?—It is not sufficiently detailed on that point. The fall of rain is so enormous in some places as to be hardly credible.

5437. Can you give an instance or two of these very extreme rainfalls ?—At Cherrapoonjee, in the Khasia hills, the annual fall of rain has amounted to from 500 to 600 inches, or fifty feet. In the month of August 1841 it is recorded to have amounted to 264 inches, and that during five successive days 30 inches fell every 24 hours. At Mahabaleshwar, on

the Western Ghats, the fall is 248 inches. There are reports on the rainfall at different places to be found in the Journal of the Asiatic Society of Bengal.

5438. And of the temperature and other meteorological elements?—Yes.

5439. Then, as you have mentioned, there are places where there is no rain at all?—There is little or no rain at the moderate elevations in Western Thibet, and in the arid parts of Sind and adjoining deserts of the Punjaub. The average annual rainfall in Sind does not exceed 5 inches; at Agra it is about 20 inches; at Khandalla, on the Western Ghats, 200 inches fall, while at the foot of the eastern slope only 14 inches are said to fall, and at Poona, a little more inland, 24 inches. The local differences are very great, but they are generally explicable by the relation which the localities bear to the mountain ranges, which arrest or intercept the monsoons.

5440. In going up the valley of the Ganges does the rainfall generally diminish?—Yes; it diminishes gradually as you advance north-westward towards the Indus, where it is very light.

5441. Until you approach the Himalayahs?—Close under the Himalayahs it is greatest, and diminishes as you recede from them.

5442. Have you any information to give the Commission with regard to the Tarai?—I have paid some attention to the physical conditions and vegetation of the Tarai.

5443. Is there anything in the vegetation or the physical conditions which you think accounts for its fatality?—Not in its specific vegetation, but there is in its physical condition and conformation. The Tarai is a stretch of shallow depression, or succession of wide flat-bottomed valleys, extending parallel to the Himalayahs from the Brahmapootra river to the Indus, or, as more strictly limited, to the Ganges. It is of variable width, attaining in some parts, as between Oude and Nepaul, a width of many miles. It is bounded by the outer ranges of the Himalayah on one side, and towards the plains by a slightly elevated steppe, called the Bangur land. This wide depression is either sheeted with forest or grass jungle, and patched over with extensive swamps. It becomes deadly unhealthy during the rainy monsoon, and immediately before and after it. The unhealthy condition is not limited to the human species, who are fearfully liable to bad remittent fevers and their sequelæ, but it also affects the domestic cattle. One winter I passed through the Rohilcund Tarai when safe, and at the village of Rooderpoor, where I examined great herds of cattle, I found that a very large proportion of them, young and old, had been fired with a hot iron on the flanks, this being a remedy practised by the Hindoos for enlarged spleen. They had also, in addition to enlarged spleen, the flabby look and pallid colour of the mucous membranes which is characteristic of spleen disease as a sequelæ of fever. I remember an instance also in the valley of Dehra Doon, where the settlers were carried off by a violent outbreak of deadly fever, which also affected their cattle.

5444. That, you think, is not connected with any particular form of vegetation or geological formation?—Certainly not.

5445. And only has reference to the physical condition of the country?—Yes; there is a wide shallow depression, with an intense development of tropical vegetation, and abounding in swamps.

5446. Supplied constantly by water from the mountains?—Excessively humid and deluged with rain, in consequence of its proximity to the mountains; being the conditions that are conjointly most favourable to the production of malaria.

5447. Is the water stagnant, or does it flow freely from this Tarai?—All the principal affluents of the Ganges pass freely through the Tarai; but there are numerous and extensive swamps, or jheels, and bad natural drainage.

5448. What is the soil; is it decayed vegetation?

—It is a very rich soil of decayed vegetable matter, resting on a substratum of coarse sand or gravel.

5449. Do you think that disease is communicated through the air or through the water?—I believe that disease is there communicated by malaria arising from vegetable decomposition.

5450. That is, that it originates in it?—Yes.

5451. But does it affect the organization of man or the animals through the water or through the air?—My own conviction is that it is through the air.

5452. Is not that a general sort of popular belief, which is not very well founded?—I think otherwise—as regards fever. But the prevalent opinion among the natives of India is different; they look upon the water as being the source of the disease.

5453. Are there any very solid reasons for believing that disease reaches man through the air rather than through the water?—It is a large, complex, and very difficult question, to which I cannot at the moment give you a satisfactory reply; it is one which has attracted the notice of the best chemists, during half a century, without arriving at any decisive results. Professor Daniell thought that he had detected it in the presence of sulphuretted hydrogen, and that that was the cause why pestilential fevers were so rife on the coast of Africa, on board of cruising vessels at a distance even of 50 or 60 miles from the land; the quantity of sulphuretted hydrogen in the sea water having been sufficient to affect the copper sheathing on their bottoms. But that opinion has not been confirmed or accepted, and all the subtlety of analytical chemistry has not been able to detect the peculiar state of the atmosphere which causes malarious fevers. In the Tarai the physical conditions which affect the water are constant during successive years, while periodically, after the lapse of years, intensely virulent outbreaks of pestilence occur, which are specifically marked by the natives under the name of Aol, to distinguish them from ordinary years.

5454. (*Sir R. Martin.*) Are not the people seized with Tarai fever in various parts of India, who gallop through the Tarai in the shortest possible time, without tasting either food or drink?—They are seized with Tarai fever, after passing through it in the most expeditious manner, without tasting food or drink that they have not carried with them. I have known cases where it was inconceivable to me how the disease could have been communicated through water.

5455. (*Sir P. Cautley.*) You call that the Tarai which runs at the foot of the hills from the Brahmapootra to the Indus?—Yes, as a general designation for the stretch of low land at the foot of the Himalayahs.

5456. A great portion of that, I believe, is not wet, is not that so?—On the contrary, all that part of it which lies between the Indus and the Sutledge, which is now under cultivation, is dry, and generally speaking as healthy as the adjoining plains; while east of the Ganges it is humid and deadly unhealthy.

5457. Where the forest has been removed the country has become healthy?—Perfectly healthy; and there are facts on record which prove the previous existence of the forest; for instance, the Emperor Baber, in his autobiography, mentions that in his descents upon India he hunted and killed many rhinoceros in the forests near Peshawur, that animal has been driven back several hundred miles to the eastward, and is not found now west of the Ram-Gunga. It is rare even there and until you reach the Gogra.

5458. (*Sir R. Martin.*) That goes to confirm the general observation, that the best improvers of climate are a succession of crops and good cultivation?—Yes.

5459. (*Dr. Farr.*) You have spoken of the water, have many analyses of the water of India been made?—But few.

5460. Impurities, or organic matter, for instance,

excreta from the inhabitants, getting into the tanks, would be always injurious ?—Clearly so.

5461. You have spoken of the presence of vegetable and animal life in the water as tending to purify the water ?—Yes, as destroying the organic matter, and maintaining that wholesome proportion of oxygen and carbonic acid that are considered to be essential to good water, particularly the oxygen.

5462. You do not think purely rain water less likely to be healthy, I presume, than water drawn from the alluvial soil in a valley such as that of the Ganges ?—Perhaps not less healthy, but mawkish and insipid from the want of the hardening earthy salts which make good spring or well water palatable ~~and wholesome.~~ The well water, tapped from the alluvial soil, in the north-western districts of the valley of the Ganges is generally good in quality, and preferable to rain water ; and in the case of tanks, my impressions are so strong that I would rather take filtered water out of a good tank than drink rain water.

5463. If you wished to make a provision for a large body of troops, would you not think that it would be best to collect the rain water and store it up, and if kept from the light would it not be the best ?—I do not think I should. I am not aware that rain water is ever used on the great scale you contemplate, except for isolated garrisons, or under similar straits, where good water from ordinary sources of supply is not procurable, and as a general measure it would be impracticable in India ; for suppose a large body of troops thus supplied in cantonments to be moved on service, it would be chimerical to think of a commissariat organization for supplying them daily on the march with rain water. They must be thrown on the ordinary resources of the country. But taking the case you assume, if left to my own judgment, I would not consider a store of rain water preferable.

5464. It is found that water is frequently in a wholesome state before vegetation takes place in it, or that vegetation cannot destroy the whole of the organic matter in it ?—You there introduce a condition which is fatal to the equipoise of which I have spoken. It is essential to have in it that amount of animal and vegetable life which shall maintain a fair balance ; if you either put too much animal life into it, or let more organic matter be in it than can be decomposed by the vegetation, you upset the equilibrium, and get bad water ; but I will assume the condition which you have proposed, and referring to the tanks, in which, by long experience, it is ascertained that the water is good, I would rather give the troops that water than rain water, although I should feel perfectly satisfied that I had provided good water if I gave them rain water.

5465. (*Sir P. Cautley.*) Practically it would be out of the question, would it not, to think of providing the troops with water of that sort out of tanks ?—Yes, out of the question in every case. In the neighbourhood of Calcutta, many prefer drinking the water I have described. There are well-known tanks in particular spots which have a reputation for good water, and it is preferred to rain water.

5466. (*Sir R. Martin.*) You speak of the natives ?—And of Europeans also.

5467. (*Dr. Gibson.*) I think you said that the tanks from which the European troops are supplied with water do not contain either animal or vegetable matter ?—They do not ; that is to say, decayed animal or vegetable matters in the shape in which I have spoken of them (5402). They are generally tanks of considerable depth, say, 15 to 17 feet, occupying a large area. They all contain more or less of vegetable and animal life, but are generally too deep for water plants (*naiadeæ*, &c.) rising from the bottom.

5468. And, therefore, do you say that the water is not wholesome ?—The water in those cases where there is the least amount of vegetation ought not to be so wholesome ; but really it becomes a matter of specific investigation for each case. I am dealing with it in a broad and general way.

5469. (*Sir R. Martin.*) You attach more importance, with regard to health, to the characters of the surface soils than to those which are more deeply seated?—Yes; in fact I am not aware, except you get into a volcanic country, where there is an evolution of gases, like carbonic acid, sulphureous or boracic acid vapours, or any other gaseous materials, that the more deep seated strata would introduce a disturbing element, nor am I aware that there are any good or reliable observations which point to rocks in the abstract as having to do with sanitary conditions. When they are ground down into fine silt or mud in the course of rivers, and that is converted into soil, that is the condition when they come into play.

5470. Are you personally acquainted with or have you heard of the influences of ferruginous soils throughout India upon health?—My personal observation on the subject has been but limited; but there is a peculiar and highly ferruginous deposit, composed of silicate of alumina and oxide of iron, called *laterite*, which is very extensively developed in certain parts of Southern India, more especially on the Malabar coast and the Dekkan. A belt of it extends into Bengal, to Midnapoor; but it has nowhere been met with in Bahar or the north-western provinces. It occurs also in the Tenasserim provinces of Burmah, and abounds at Singapore in the Malay archipelago. On one occasion I was deputed to the Tenasserim teak forests, where there are large rivers presenting the physical conditions which characterise the delta of the Ganges, and where one is impressed with the difference in the physical character of the inhabitants, and the comparative exemption which certain of those tracts enjoy from the endemic malarious diseases that are so common in Lower Bengal. So far as physical structure is concerned, what struck me most, as differing from the Gangetic delta, was the abundance of *laterite* rock at the mouth of the Talween river, where I was in the habit of going out in a boat among the sludge in the creeks and mangrove forests with impunity in the month of May. I should have considered it highly imprudent to have risked the same exposure at the same period in the mangrove creeks of the Ganges.

5471. Then you would regard these ferruginous soils as salubrious?—I would; but it is a very limited observation, on which therefore I would not lay much stress. There is one thing, however, which must strike everybody who has visited the Burmese regions, as compared with the valley of the Ganges; there are the two great river valleys of the Ganges and of the Irrawaddy. In the delta of the Ganges you meet with a slight and comparatively feeble race, in the Hindoos of the lower districts. But go 6° further south to the Irrawaddi, where there is a higher temperature, a heavier fall of rain, with a similar delta, and you will encounter in the Burmese and Talaens, a strong, well-developed, and muscular race, who are much more exempt from the endemic diseases so prevalent in the other case. Arracan has proved a deadly unhealthy region, and I believe that *laterite* has not been observed on the coast there, or but sparingly.

5472. So also the valley of the Mahanuddy, in Gondwana, and the countries about Seringapatam?—It may be so.

5473. The west coast of Africa also?—It may be.

5474. And portions of Hong-Kong?—It may be.

5475. The soils at those places are all ferruginous, and they are most unhealthy countries, as also in the southern slave states?—It may be so; my observation was limited to the *laterite* district which I had visited.

5476. You have not observed exceptions to the observations which you have made?—I have not; I was much impressed with the difference between the Burmese and the natives of Bengal.

5477. There again there is the element of the difference of race?—Yes; but you beg the question in using that expression, for what has produced the difference of race?

5478. I am merely mentioning a fact?—But

climatic and physical conditions, in the long course of ages, may have produced this difference of race.

5479. (*Dr. Sutherland.*) It is very important with respect to India to separate the removable from the irremovable causes of disease. Bearing in mind the diseases which produce the largest amount of inefficiency and mortality, namely, liver disease, fevers of various classes, and bowel diseases, will you be good enough to state which you consider to be the irremovable causes of disease as connected with physical geology and climate?—I consider excess of heat and excess of moisture as among the irremovable causes, and as those which tell most upon the health. Take some of the healthiest stations of the Himalayahs, such as Mussourie and Simla, and put the European soldier there, where you have a climate, with respect to temperature, as favourable as that of any part of Europe, with all the exhilarating ~~conditions~~ influences of mountain air, and every adjunct that can contribute to health; then let him have certain diseases and be exposed to the rainy monsoon there, generally speaking he does not get better. Such affections as bowel complaints, secondary syphilitic symptoms, and everything in the shape of rheumatism and constitutional ulcers, &c. In Ceylon and at Singapore, where the heat and humidity are still greater, the same facts have been observed.

5480. (*Sir P. Cautley.*) Taking the line of the Himalayahs, do you consider that any moderate elevations would be good as a position for troops, say under 4,000 feet?—I do not.

5481. In Bengal there are certain places, near Balasore, for instance, where there are elevated hills to about 2,000 feet; do you consider that they would be good positions for troops?—I do not consider that anything would be really good under 5,000 or 6,000 feet.

5482. Would it not be worth while to try those places?—It might be expedient to make experiments upon some of them; but you would have so many of those disturbing conditions in force that impress me so strongly, that is to say, intense heat and moisture at a low elevation, that I consider you would only imperfectly effect the object you had in view.

5483. The high land near Balasore is covered by jungle, and at its foot there are very extensive forests. Supposing that it was considered advisable to place troops upon that high ground, what steps would you take in the first instance?—I would first determine what the physical conditions were as regards structure, configuration, elevation above the sea, temperature, humidity, supply of water, nature of vegetation, and all that class of phenomena. If at a comparatively high elevation, where oaks, pines, and tree rhododendrons grew, I should consider it immaterial to interfere much with the forest, and safe to locate troops there at once. Only such an amount of clearance would be made as was necessary or expedient for the particular site. But if the elevation was comparatively low, and there was dense forest extending from the plains up to the margin of the steppe or height, I would consider it necessary to make an extensive clearance of that jungle.

5484. The sites which I allude to are below those points where the oak and the rhododendron would naturally thrive?—Then I would clear a wide belt of the jungle below the site.

5485. Having done that, would you at once send European troops thither?—Yes, on trial, but I would be very chary about the number, for it must be remembered that I am always considering that European troops sent to a locality of that kind, at a low elevation, covered with forest, never have the fair chance that you can give them if you put them at a higher elevation; in the abstract, they are not eligible localities unless there are certain military or political reasons which make it advisable to convert these spots into cantonments.

5486. (*Sir R. Martin.*) Referring to the subject of mountain climates generally, should you not consider it very desirable that a systematic and detailed in-

quiry should be made throughout the three presidencies with a view to ascertain the actual climates of the many ranges to be found throughout India. I mean an investigation conducted by well-qualified and scientific men.—But of what kind?

5487. With regard to the nature of the climates, and their characteristics?—A great amount of valuable information, amassed during many years, already exists in India, relating to most of the subjects you have mentioned, and it does not appear to me that any separate scientific establishment or expedition for a fresh investigation is required. A measure of that kind extending all over India, would occupy a long time, and be very costly. It seems to me that it would be better first to collect and put together what is already known, and that could be done by means of the scientific staff of the India office, with a little assistance. Where information was deficient regarding any particular district, that might be made a subject of special inquiry. The principal scientific points of a strictly physical nature that are desired, are the elevation above the sea, range of temperature, rain fall and humidity, and nature of the vegetation. When you have got these, general and medical observation would supply the rest; there is a medical service spread over the continent, including many officers of high and distinguished qualifications. As I have already said, a great mass of valuable information on the above points already exists, and only requires to be compiled.

5488. As yet, I think, opinions are very much divided about the nature of the climates, according to the elevation, and that circumstance arises from want of due investigation. I am referring to the climates of the mountain ranges generally throughout India?—That may be the case as regards the medical aspect of the question, but it does not appear to me to be so otherwise. There are numerous and excellent observations on most of the principal mountain ranges of India. Take the Himalayahs, the Western Ghats, and the Neilgherries. The temperature, fall of rain, elevation above the sea at different points, on all of them are well ascertained. In the Himalayahs there are stations at intervals from Sylhet on to the Punjaub, and there are well known stations on the Western Ghats and Neilgherries.

5489. But the great ranges in the country of Travancore are utterly unexplored, and so also are many ranges in the centre of India?—The most imperfectly explored of these ranges are probably the Vindhia and Aravalli hills and their offsets. The Travancore mountains are better known. The highest peaks reach an elevation of from 8,000 to 9,000 feet, and the remarkable climate of Courtalam, hygrometrically humid, but with little rain, has been determined. The vegetation even of the Travancore mountains has been investigated by Wight, a distinguished Indian botanist, on to Cape Comorin. But in reference to the general question, the Travancore mountains being at the extreme end of the peninsula, the position might not be regarded as an eligible one for a great body of European troops, on strategical and political grounds.

The witness withdrew.

21.h.17(3).

11.

No. 585.

Proceedings of the Hon'ble the Lieutenant Governor Punjab, in the Judicial Department, dated 10th September, 1864.

Read the following papers :—

Letter from the Judicial Commissioner No. 235, dated 2nd September 1864.

Letter from Inspector General of Prisons No. 1609, dated 20th August 1864, with its enclosed reports by Doctors Gray, DeRenzy and Wikeley.

Memorandum by the Deputy Inspector General of Hospitals, Peshawur Circle, dated 24th August 1864.

Observations.—In August 1863, intermittent fever broke out in the Lahore Central Jail. The number of sick continued to increase up to December and January, and declined as the weather gradually became warmer. The mortality in nine months amounted to 23 per cent. on the strength of the Jail. No less than 272 persons died in the months of November, December, January, and February ; and the total mortality was 406.

2. The Lahore Central Jail had previously been accounted remarkably healthy. Its exemption from cholera at a time when the European troops suffered most severely had excited much attention. Its excellent sanitary arrangements, efficient drainage, freedom from offensive odours, and purity of well water, are admitted on all hands. Recently a special committee has reported that there is no latent cause of unhealthiness in defective sub-soil drainage.

3. The jail was until January last under the medical charge of Dr. Penny. That officer was of opinion that the fever was originally caused by malaria, but that it became remittent during the extreme cold, and, as the weather became milder, again intermittent. Dr. Gray, who succeeded Dr. Penny, whilst agreeing with him concerning the original type of the disease, considers that it ultimately took the shape of what is called relapsing fever. This opinion is shared by Dr. Dallas.

4. There seems to be no question as to the fever being, in the first instance, malarious. It attacked not only the prisoners, but the members of the jail establishment, and, as is stated by Dr. Gray, the free population outside. Amongst the latter it does not appear to have caused unusual mortality, although it is well known that in some years great havoc has been committed in various parts of the Punjab by intermittent fever ; and it is

From the Judicial Commissioner Punjab, to the Secretary to Government Punjab, No, 235—1342, dated 2nd September 1864.

I have the honor to forward an original report, No. 1609, dated 20th ultimo, from the Inspector General of Prisons in the Punjab, with its accompaniments, regarding the fatal fever which prevailed within the last few months in certain jails in this province.

2. I think it is impossible to read the reports of Drs. Dallas, Gray, and DeRenzy, without feeling convinced that they rightly describe the epidemic as relapsing or famine fever, and that it was caused mainly by—

I. Intense cold.

II. The low state of the vitality of the prisoners, arising from insufficient diet.

III. Over-crowding.

3. Of course it is not intended to be said that the prisoners in our jails have by any means been starved; but while the quantity of food was just sufficient, there was a want of variety, and the quality was not such as to keep the convicts in a state of health which enabled them to withstand the other morbific influences which surround them.

4. An improved scale of dietary, in which animal food is included, has already been sanctioned by Government for three months; but Dr. Dallas justly points out that it will be impossible to form any correct opinion on the subject in less than a year, and I recommend that the experiment be extended to twelve months.

5. Dr. Dallas is now engaged in proposing measures with a view to the prevention of over-crowding, and for securing a sufficient allowance of superficial space to each prisoner. I hope to lay these proposals before Government shortly.

6. As for clothing, His Honor in para. 18 of your letter No. 308, dated 30th May last, sanctioned its being added to where deficient. This and the observance of Dr. Dallas's recommendation that the winter clothing should be ready by the 1st August, should prevent any cause of complaint on this score.

7. I cannot concur in Dr. Dallas's fourth recommendation that shutters be put to the grated doors and windows of all barracks. I am convinced that any such interference with the free ventilation of the sleeping barracks, so long as the present system of confining 50, 60 or more men in one ward continues, will be much more injurious than a free current of air. I would positively interdict any prisoner being allowed to sleep in front of a window or door, and would supply more bedding and extra blankets rather than shutters. Fires might be lighted from time to time during the cold weather and rains. So soon as a sufficiency of superficial and cubic space can be allowed to each prisoner, I would not object to shutters.

8. I have authorized Dr. Dallas to issue his own instructions interdicting the transfer of prisoners from any jail in which there has been unusual sickness for the previous 21 days to any other jail.

9. I scarcely see the necessity of keeping prisoners sent to Mooltan for transportation separate for a period of 14 days, if no sickness has occurred among them. Should sickness have broken out during their transit, of course such a precaution would be necessary.

10. So as regards the Gola Serac Jail. In case of necessity, the Thugs can be removed from it, and it may be made available for the prisoners of the Central Jail.

11. I think that the acknowledgments of Government are due to Drs. Dallas, Penny, Gray, DeRenzy and Wikely, and to their native subordinates, for their zeal and exertions during the prevalence of the epidemic; and I beg to recommend that the valuable reports of Drs. Dallas and Gray be published. You will observe that the Sanitary Commission in Calcutta has called for a copy.

From the Inspector General of Prisons, Punjab, to the Judicial Commissioner Punjab, No. 1609, *dated 20th August* 1864.

Lahore Central.
Mooltan.
Goojranwalla.
Female Penitentiary.

I have the honor to forward in original, for the information of His Honor the Lieutenant Governor, reports on the fever which lately prevailed in the jails marginally noted.

2. In forwarding these reports, I beg to offer the following remarks.

3. Great diversity of opinion has existed as to what the form of fever which prevailed really was. By some it has been called typhoid remittent, by others typhus, and by others relapsing or famine fever. The most complete details of symptoms are supplied from Mooltan, by Dr. DeRenzy, and from the Lahore Central Jail, by Dr. Gray. It will be as well to consider these in detail.

Diversity of opinion as to the form of fever which prevailed.

4. The absence of premonitory symptoms is noted in both cases. At Mooltan, "the attack was not ushered in by any marked symptoms." In the Lahore Central Jail, "some admitted that they had felt more or less ill in the barrack for two or three days, and that at a stated time, a distinct shivering fit had occurred; others, however, affirmed that only a few hours ago they had become suddenly warm and feverish, their head giddy, &c., but that no premonitory symptoms or shivering had been experienced."

Symptoms of the disease. Premonitory symptoms absent at both Mooltan and Lahore.

The following are the symptoms of the disease as observed in the Mooltan Jail:—"The patient complained of weakness, loss of appetite, slight head-ache, pains in the limbs, chilliness. There was usually a circular livid spot on the cheek, which was a sure indication of the disease. In 24 hours from the time of first feeling unwell, the patient was completely prostrated; he was barely able to move; his tongue was brown and dry, very red at the edges; occasionally the whole tongue was red, dry, and glazed; sordes formed on the teeth. The conjuctiva in almost all cases was of a yellowish tinge; in many there was general jaundice, a complication which was very fatal. Delirium was not a common symptom, except where jaundice existed. There was intense torpor of the mental functions. The patient seemed to have great difficulty in understanding anything that was said to him. When asked to put out his tongue, he seemed to make a strong effort of the will before doing so. He opened his mouth slowly and with difficulty, and protruded the tongue slowly and tremulously. He lay quite indifferent to all that was going on around him. He expressed no wants, made no complaints. So profound was the torpor that I believe patients would have remained for days without asking for food or drink, so that constant care was required to see that they got nourishment. In some few cases, the craving for drink was very urgent. Patients had a typhus smell; but in no case did I discover petechiæ or maculæ. In a large proportion of cases, there was considerable fulness and tenderness on pressure in the epigastric region. Vomiting was not a common symptom; though in a few cases it was present, and proved very obstinate. Hiccup was very common; in several cases it caused great distress, continuing, with hardly any intermission, for five or six days; it usually appeared early in the disease, and was not then indicative of danger. Epistaxis was very common in the latter end of March and beginning of April. It was often checked with much difficulty, and was a very unfavorable symptom. In a few cases, the disease ran a very rapid course, coma supervened, and the patient died in from six to twelve hours from the time of seizure. As a rule, however, the history was one of progressive debility, for a period varying from five to six days. The tongue became intensely dry and hard; the teeth covered with black sordes; the body greatly emaciated; the pulse feeble to mere threadiness. The patient's condition began to improve

Symptoms of the fever as observed in the Mooltan Jail.

without any marked symptoms indicating the change,; the pulse became slower and acquired more body. This was the *first* sign of improvement. Soon after, the tongue moistened and cleaned, and the patient looked brighter, and asked for food. He said he was "khair," very well, only that he was weak. In a day or two his appetite became very keen, and he entreated for a liberal allowance of food. He continued steadily to improve for a period ranging from five to twelve days, when he was again seized with the same symptoms as at first, but in a milder form. This attack was commonly attended with dangerous local complications, of which diarrhœa was the most formidable. The second attack passed off, like the first, without any marked crisis, and was sometimes followed by a third, or fourth, or even a fifth. Of the cases attended with diarrhœa, an immense proportion proved fatal. After the twelvth day, diarrhœa was the immediate cause of death. No medicine seemed to exercise any influence upon it. The dejecta presented a great variety: in some large quantities of mucus; in others small feculent stools, largely mixed with blood and mucus; in others the excreta, consisting of apparently healthy fœcal matter, were immense as compared with the quantity of food taken by mouth; in others there was white chalky diarrhœa. The diarrhœa cases were marked by the most distressing emaciation. It was painful to look at the wretched objects. They had the ghastly look of skeletons inclosed in skin, which became dry and hard, and leathery, and covered with a white scurf which no amount of washing with soap and water could remove. These cases retained consciousness almost to the last; many of them eat heartily within half an hour of their death. In the cold weather of January and February, some cases were complicated with pneumonia; but, as a rule, pectoral complications were rare. Œdema of the lower extremities was a very common sequela of the fever. I have never found it in connection with albumenuria."

Fever as observed in the Lahore Central Jail by Dr. Penny.

In considering Dr. Gray's description, it will be as well to go back to an earlier period, and note what occurred when Dr. Penny was in charge; for it is evident that the disease which prevailed in the Central Jail at Lahore commenced in a different form from that it had assumed when Dr. Gray took charge. Dr. Penny states that "from the 15th of September to the end of October, the type of fever was purely intermittent, recurring in paroxysms and amenable to quinine. About the end of October and the beginning of November, as the weather became gradually colder, the type changed. Instead of a complete intermission, there was only an abatement in the febrile stage; the fever passed from an intermittent to a remittent form, in which there were distinct exacerbations of the fever, followed by an abatement of all the symptoms; but the pulse never returned to the natural state,—the exacerbations and remissions were neither definite in time nor in duration. Excepting some few cases of unexpected collapse the type of the fever was unaccompanied with bad symptoms; there were the secondary affections of pluro pneumonia, but not the slightest evidence of cerebral or bowel disease."

"In the height of the epidemic, the prisoner after being two or three days slightly affected by quickness of pulse and heat of skin, insufficient to distress him, perhaps, got seized suddenly with severe headache generally, and not having eaten for two or three days, was taken into hospital, scarcely able to walk, with a white tremulous tongue, dry down the middle, pulse quick and weak; and, full of dread and anxiety, imagined his throat dried up, his liver to be rotten, or his kidneys to have disappeared. He remained three or four days with all his feverish symptoms, which either mitigated, the heat of the body lessening as the tongue cleaned, or else by a gradual transition, he sank into a state of languor and wasting of flesh and strength, and sank exhausted. In the cases of recovery, almost without exception was there a relapse. It became the rule for a second attack to occur, and it was exceedingly common for the native doctor to report it was the third or the fourth time of recurrence of fever."

Dr. Gray gives the following as the symptoms of the disease he found in the jail:—

Dr. Gray's description of the disease.

"The patient when admitted into hospital generally entertained the most gloomy apprehensions as to his condition, anxiety being evidently depicted on his countenance. When asked as to the seat of pain, he would sometimes refer to his loins, limbs, and head; but more frequently he would state that his internal organs, liver, kidneys, &c., were rotten or burnt up. The countenance presenting an anxious, but usually not a dull or stupid, expression, was in many cases covered with a more or less general flush; the conjunctivæ, as a rule, were not greatly, if at all, congested; but the very generally jaundiced tinge was most observable. This tinge in a very great number of instances became developed into a deep yellow hue; the tongue was deeply yellow or white furred; and very often, even on admission, had already dried at the tip; if it had not, in bad cases, a triangular piece at the tip soon became dry and brown—the process extending backwards, at first along the centre. Instead of the furred tongue, there were not a few instances in which it became dry, glazed, and shining. There was usually very intense heat of skin, which was always dry. I very carefully looked for a rash, but none was even discovered to exist. The pulse was usually at first full, and frequent 100—120; it soon became weak and compressible, retaining its frequency. This was a most constant symptom. The respiratory movements were generally quickened in proportion to the state of the pulse. There was usually from the first very great muscular and nervous depression. The patient was quite conscious, but did not wish to be disturbed. Often there was frontal head-ache or vertigo, the prisoner stating that, on attempting to lift his head it appeared to whirl round; the tongue was frequently protruded in a series of tremulous jerks, and the arm when raised trembled like an aspen leaf. In very few cases was there impairment of the mental faculties; at least till towards the termination of the disease. Vomiting was not unfrequent; in some instances it was severe, but, as a rule, it was not persistent;—when it did occur it was at the commencement of the disease. There was often more or less gurgling on pressure over the epigastrum; pain was also generally felt there on pressure, though not complained of before. Enlargement of the liver and spleen was most frequent; the bowels were usually constipated, but great care had to be taken in the medicine used as aperient, diarrhœa being most liable to supervene. The urine was scanty and high coloured, the patient supposing that it was mixed with blood. The above is a general outline of the symptoms as observed on the patient's admission. They did not, of course, all present themselves in each case; and when present, they varied considerably in severity. But there were numerous admissions which in every particular corresponded with the account given. The majority of the fatal cases that did not succumb from some sequela were protracted till the 4th, 5th, 6th, or 7th day. In these the severity of the symptoms described became aggravated. The tongue, from being white or yellow furred, became dry and brown, sometimes quite black and deeply cracked; the pungent heat of skin remained; the pulse soon lost its fulness, becoming weak and thready; prostration increased; sordes collected about the teeth and lips; the patient would in all probability become torpid, but retain his senses till within a few hours of death, when the torpor sometimes passed into a state of coma under which he would sink. It is worthy of remark that the last mentioned stage, viz., that of coma or insensibility, when it did exist was not as a rule protracted. Often did I examine and receive rational answers from a patient at night, who I was informed on my visit to the hospital next morning had become insensible during the night and died. From statement given in appendix D, however, it will be seen that not a few died under one, two, or three days after admission into hospital. These were the cases that exhibited the greatest sense of weight and oppression; and my opinion is that the virulence and strength of the fever poison paralysed the ganglionic system of nerves, thus stopping the action of the secretory

and excretory organs, and bringing on death by collapse. The proportion of such rapidly fatal cases was less after I took over charge than it was in the two or three previous months. In cases that did not prove fatal in either of the ways described, the original symptoms remained unabated for a period varying from 5 to 9 days (the average being 6 or 7). During the twenty-four hours, and from day to day, there was no distinct remission in the febrile symptoms. After the second or third day, the tongue usually became dry, and in many instances brownish; the pulse smaller and weaker; the patient, perfectly sensible, complained of distressing thirst, and the pains in his bones and joints. At the end of the above mentioned period (5 to 9 days), there was a sudden cessation of the febrile symptoms, the crisis being in a good many instances ushered in by a profuse perspiration, but much more frequently by a discharge of copious watery stools. The pulse became slow, tongue moist; the skin lost its pungent heat and great dryness; with the exception of a general feeling of weakness and pain in the limbs, joints, and muscles, the patient now expressed himself well; and, if his appetite had gone, which was not invariably the case, it returned, and he was clamorous for food. In this state of apparent convalescence, he would remain for several days (from four to eight or nine) when all the original symptoms presented themselves, and continued sometimes for about the same number of days as the original attack, but generally the period of duration was shorter. The adynamic tendencies before described were observable in the relapse, and many succumbed to it. In not a few instances a second interval of complete quiescence was followed by a second relapse, and a third or even fourth recurrence of the sequence was not unknown. The occurrence of relapses was universally noted by the prisoners themselves, who divided their illness into periods which they denominated as their first, second, &c., attack."

I have preferred to give Dr. Gray's statement of symptoms at length, rather than to incur the risk of marring so lucid and minute a description by abbreviating it.

One and the same disease in the jails of Mooltan and Lahore.

From the above, it will be evident that one and the same disease prevailed in the jails of Lahore and Mooltan. In both was the absence of premonitory symptoms noted. The symptoms which occurred in the course of the disease were almost identical in both jails. The anxious flushed face; the dry tongue; jaundiced conjunctivæ; pain on pressure over the epigastrum; great depression of the muscular and nervous systems; rareness of delirium; absence of rash of any kind; and strongly marked tendency to repeated relapses. The lesions, too, observed after death, were in both cases almost identical. The spleen was enlarged; the liver was in all cases more or less diseased; the large intestines were more or less congested; in some cases were ulcerated; the small intestines were in *no case* ulcerated. Dr. Gray was most careful in looking for this condition. Dr. DeRenzy, too, looked for it. Dr. Penny also by himself, and with me, made numerous post mortem examinations expressly with the view to ascertain whether there was ulceration of the small intestines (Peyers patches), but in no case did either he or I find this condition.

Post mortem appearance.

Fever described by Dr. Gray and Dr. DeRenzy, a continued relapsing fever; that described by Dr. Penny, an intermittent.

The symptoms detailed by Dr. Gray are clearly those of a continued fever attended by frequent relapses. So are those given by Dr. DeRenzy; but as clearly does Dr. Penny urge that the fever commenced as a simple intermittent, passing into a remittent as the weather grew colder, and ultimately attended by frequent relapses. It seems to me that there is nothing inconsistent in this. I can quite understand that a disease, which in its origin and first appearance may be simply a malarious intermittent, should, in combination with other circumstances favorable to that end, become capable of originating

Was the fever typhus, typhoid, or relapsing. Not typhoid; and reason.

and developing a poison of an entirely distinct character; and I have for some time held this opinion. Was the disease typhus, typhoid or enteric; or relapsing or famine fever? We may at once say it was not typhoid or enteric fever, because that particular lesion which marks this disease was absent.

Not typhus.

Was it typhus? I think not, for the following reasons.

1st. In typhus there is commonly for two or three days a feeling of chilliness, headache, pain about the limbs and back, and general discomfort. In the statements above given, the absence of all premonitory symptoms is noted.

2nd. There is a rash particularly indicative of typhus. In no case did Dr. DeRenzy or Dr. Gray find this; though they looked for it.

3rd. There is almost always more or less delirium in typhus. "Delirium was not a common symptom at Mooltan, except when jaundice existed"; at Lahore, "the few instances of delirium were quite masked by the large proportion of cases in which the men retained perfect consciousness during the whole course of the disease."

4th. Jaundice is not common in typhus fever; it was an almost universal symptom at both Lahore and Mooltan.

5th. And this is a most important point. Relapses are *very rare* in typhus; in the epidemic we are now considering they were the almost invariable rule.

Concurrence in Dr. Gray's opinion, that the epidemic was not typhus.

There may have been a few cases of typhus.

These facts lead me to concur in the opinion formed by Dr. Gray that it was not an epidemic of typhus fever, though, perhaps, there may have been a small admixture of typhus cases; this, however, is quite open to discussion, and I am not sure that the existence of any *true* typhus cases could be proved.

Was it relapsing or famine fever? The symptoms of this disease are a sudden

Symptoms of relapsing or famine fever.

invasion marked by chilliness and shivering, a quick pulse, a white moist tongue becoming dry and brownish, tenderness at the epigastrum, vomiting, jaundice, enlarged liver and spleen, hot dry skin, constipation, high coloured urine, severe headache, pains in the back and limbs, occasionally delirium, a sudden cessation of these symptoms, and frequent relapses, after death no specific lesion, but usually enlargement of the spleen and liver.

Reported by Dr. DeRenzy and Dr. Gray.

We have these symptoms given by Dr. DeRenzy and Dr. Gray.

Objection to its being relapsing or famine fever.

But it may be objected that because we had not the conditions necessary for the production of relapsing or famine fever, we could not have the disease produced.

Meaning of the term famine fever.

If by the term famine fever be meant a disease caused by *absolute* starvation, and only witnessed in times of general public famine, then I admit we had not the conditions necessary for the generation of this desease; for, although not properly fed, and in all their ailments proving this, yet the prisoners were supplied with an amount of food sufficient to place them above the condition of starvation. But if it be admitted that this designation may be applied to a disease the result of feeding at a minimum inconsistent with health, combined with other conditions tending powerfully to depress the vital energies, then we need not hesitate to make use of it; and I

A comparison of the phenomena which constitute relapsing or famine fever and those which occurred, compel us to adopt that name.

conceive that from a comparison of the phenomena recognized as constituting relapsing or famine fever, and those which are reported to have occurred, we have no alternative left but to adopt this nomenclature.

Disease in the Goojranwalla jail.

The medical officer who was in charge of the jail at Goojranwalla during the prevalence of the epidemic, unfortunately left that station before writing his report, consequently he has not been so minute in his description of the disease as I could have wished ; but from the cases I saw myself, and from the appearances found after death, as described in the report, I believe the fever which prevailed in that jail to have been the same as that which occurred in the jails of Lahore and Mooltan. The post mortem appearances given are as follows :—

"A tendency to general disorganization of the blood, serum being invariably effused in large quantities and of a pale, thin character, generally in the pericardium, but also frequently in the ventricles of the brain. This effusion of serum was more marked in the earlier cases, but still persisted, though in a less degree, in the latter cases ; but in this the serum was not so pale and thin. The lungs were generally congested and hepatized towards the posterior portion near the base, and more or less disorganized, readily breaking on pressure. The liver and spleen were frequently enlarged. One case calls for particular mention—a case of rupture of the spleen."

Fever in the Rawul Pindee jail in 1862-63.

Although it does not come within the scope of this letter, yet I may, perhaps, be permitted to mention that, from conversations I have had with the Civil Surgeon of Rawul Pindee, I am of opinion that the fever which prevailed in that jail at the end of 1862 and commencement of 1863, was very similar to that we are now considering.

Fever in the female penitentiary and Delhi jail.

The fever which prevailed in the female penitentiary this year was of the same character, and the cases of fever which occurred in the Delhi jail during April, May, and June, were also of a similar nature.

Causes of the fever.

I proceed now to enquire as to the causes of this disease.

Dr. DeRenzy's opinion.

Dr. DeRenzy, at Mooltan, considers the disease to have originated from infection, but he also states that there were in the jail itself certain conditions favorable in a high degree for the growth of infection, if not sufficient to generate an epidemic.

Dr. Penny's opinion.

Dr. Penny, at Lahore, considered that the men, debilitated by a simple malarious poison and inadequately fed, were unable to withstand the cold. Dr. Gray is of opinion that the fever he saw in the Central Jail at Lahore was caused by underfeeding and overcrowding, and that the mortality was increased by cold.

Dr. Gray's opinion.

Dr. Wikeley's opinion.

Dr. Wikeley attributed the disease at Goojranwalla to the action of cold on weak and enfeebled constitutions.

Opinion of Civil Surgeon Rawul Pindee as to cause of fever in that jail.

The medical officer in charge of the Rawul Pindee jail attributed the fever in that jail, before referred to, "to the inclemency of the weather, the low state of vitality of the prisoners, but mainly to the fact that the diet was insufficient."

Besides the bearing this has on the question we are now considering, I refer to it

Correction of a misquotation in Jail Report.

because I wish to take the first opportunity that offers to correct an error in my report on the jails for 1863. In para 37 of that report I quoted from the medical officer's report incorrectly. I read in the original the word "jail" for "fact," and wrote as part of the quotation "but mainly to the jail, the insufficiency of the diet." This is incorrect. What I have stated above is the correct quotation. It does not appear to me that the purport of the statement is much affected by the mistake; but the Civil Surgeon has pointed it out to me, and I, therefore, ask leave to make the correction. I need hardly say that I did not intentionally make a false quotation.

Cold.

That cold by itself will produce the disease in question, I do not intend to assert; but that it does exercise a most marked influence on the human frame, is beyond question. Applied for a long time, it is one of the most powerful depressants known. It is quite consistent with my own knowledge that the cold weather is the most fatal season in the Central Jail, to those who may have been debilitated in the autumn by fever. The cold in this province is very intense at times. Even to well-clad Europeans, unaffected by poor feeding, or the effects of imprisonment, the cold is such as to be keenly felt. What must it be to the inmates of our jails then? But it is worthy of remark that every officer who has been brought in contact with the late epidemic of fever, has either considered cold one of the causes originating the disease, or has attributed much of the attendant mortality to this agent. Consider the influence cold exerts in European climates, where the heat of summer is not so great as in this—where the residents are more gradually prepared for its development, and more inured to its action.—I believe that cold had much to do with the late sickness.

Improper food.

It might, perhaps, seem unnecessary to refer to the subject of food, inasmuch as it has already been brought to the notice of Government, and I hope remedied; yet it cannot be entirely passed over in considering the causes which led to the late epidemic. I have stated that I consider the prisoners received an amount of food which placed them above starvation, but I believe the quality of the food, that is, the constituents of the dietary, to have been such as to render, by long continuance in its use, their systems incapable of withstanding other morbific influences brought to bear against them; and it is in the treatment of disease that this has struck me most forcibly. An epidemic somewhat analogous in character prevailed some years ago in the Mooltan jail, and the medical officer who was in charge there also arrived at the conclusion that the diet scale was not correct. But though I have long been of this opinion regarding the dietary formerly in use in our jails, and have expressed it, I by no means wish to cast blame on those who hold a different opinion. The Punjab diet scale was based on the scales existing in other parts of India at the time, and was in no way less liberal; on the contrary, I think, it was more correct than many. A certain amount of experience was necessary to inform us fully of the diet required for Punjabees, under the peculiar circumstances of imprisonment, and such could not be procured except from extended observation, which, I think, we have now obtained. It was in consequence of the firm conviction I held on this point, that I felt it my duty to bring the subject before the Government. It is, however, but fair to mention that certain jails (e. g. Shahpoor) have been peculiarly exempt from sickness, though using the same dietary. There are certain conditions which should be considered with reference to these small jails, where the health has been good, which would prevent their cases being quoted with any force against the argument I advance. It is though, I think, unnecessary to press the point, as the evil has been remedied.

The question of overcrowding next arises for consideration. The standard allowance

Overcrowding.

for each prisoner in the Punjab is 400 cubic feet. Superficial or lateral space is not specified. In no jail was this allowance trenched upon, during the time of the fever. Indeed, I may safely state that there is no point on which I am so watchful as this. The records of your office will bear me out. Every month I consider the jail population, with reference to the accommodation, and, under your authority, if they be necessary, make transfers. Dr. DeRenzy says :—"On the 31st of December, the average superficial area in barracks allowed for each convict was twenty-seven feet. The cubical space was 440 feet. There was a space of *nine inches between* the convicts as they lay on the ground." Dr. Gray says :—"At the time the epidemic broke out, there were about 2000 convicts in jail, so that each had an average of 480 cubic feet of sleeping room ;" and in another place, "the superficial space allowed to each (convict) is only about eighteen square feet, or nine feet by two." In the Goojranwalla jail the amount of space enjoyed by each prisoner is not given ; but the jail was very much below its license. It is clear, then, that the prisoners had their sanctioned allowance of space. Now, the question to be considered is, whether nevertheless there was overcrowding, that is to say, whether such a number of human beings were placed within a certain space as to give rise to the effects, known to result from the occupation of too small an amount of space, by individual members of a large body of men, and their consequent too close approximation to each other. I shall not attempt to argue the question of the ill effects arising from overcrowding—in the present day that is unnecessary ; but I will consider one argument which is sometimes brought forward to support the assertion that 400 cubic feet of space is sufficient for our prisoners. It is stated that, when free, they enjoy no more than, if so much as, 400 cubic feet of space per man in their dwellings, and the deduction which it would appear is sought to be drawn from this is, that, therefore, it must be enough for them in jail. I admit the fact ; but I deny the deduction. The natives of this country, I am ready to admit, occupy in large numbers small wretchedly ventilated hovels ; and, if the cubic contents of one were divided among the number of individuals who called it their home, I question whether each would get, not 400 cubic feet, but 200 cubic feet for his share : but their houses are not inhabited constantly by the owners ; the house is used to hold the property, and the men sleep on the top, or outside the house. Even if they do sleep inside, they can, when they find the atmosphere oppressive, go out ; not so with the prisoner, he must occupy the same room until he is let out in the morning, that is to say, for from eight to ten hours at least. The one is a free man, the other a prisoner, and no comparison can be made on this point between the two.

In their report, the Commissioners appointed to enquire into the sanitary state of the army in India, recommended that each soldier should have from 1000 to 1500 cubic feet of space, with a superficial area from 80 to 100 square feet, according to the airiness of the position. I do not consider this at all excessive for an European ; but I do not intend to say that a prisoner in jail should be allowed so much. It is possible, that, on account of certain constitutional differences, a native may require less space than an European ; I would, however, draw attention to the recognition of the necessity for *superficial* space in the recommendation. It will be seen, from a reference to Dr. DeRenzy's report, that there was a space of nine inches between the prisoners as they lay on the ground in the Mooltan jail, and in the Lahore jail they have a superficial space of about eighteen square feet or $9' \times 2'$. Now, supposing a man's shoulders not to exceed eighteen inches in width, and supposing that he lies at night perfectly straight in his bed, he would have six inches space to spare, or three inches on either side ; and supposing that his neighbours, too, lie straight without any inclination of the body to one side more than another, there would then be between the man and his fellow prisoners on either side of him six inches ; but it is hardly to be supposed that the men

sleep on their backs, and with their bodies in a straight line, because that would be an uncomfortable and constrained position, and to most people quite destructive of all power to sleep. Situated, then, as the prisoners in the jails of Moolton and Lahore were, they must have been so close as to breathe into the faces one of another. Under these conditions the air inspired by the men must have been not only deficient in wholesome nutritive elements, but vitiated by the results of pulmonary and cutaneous exhalations from the bodies of the prisoners themselves. If there were constantly a good stream of fresh air passing in and out of the building, the ill effects of this vitiation of the atmosphere would, no doubt, be very much controlled; but in the hot weather and the rains, when the air is quite stagnant, no such current does take place, and in the winter the doors are closed to keep off the cold. I need not point out to you how this state of things predisposes to, nay, even generates, disease. The following statement by the Deputy Commissioner of Goojranwalla is very pertinent to this point:—"The one standing complaint of the prisoners themselves is the 'Roosur,' the intense oppression of close-locked up barracks during the rains. It is, in my opinion, the sufficient explanation of all the illness. They come out of the barracks in the mornings during the very hot months, but more especially during the rains, quite done up already with the intense perspiration and the closeness of the atmosphere. They must, however, go to work, and have to work all day in the heat."

But it is not necessary that the testimony of the prisoners should be sought; let any one go into a barrack occupied by from eighty to 100 or 150 prisoners at night, after it has been so occupied for some hours, and he will find sufficient to convince him of the very questionable state of the atmosphere; and it must be borne in mind that all this occurs during the hours of sleep, when the system, more or less exhausted by the exertions of the day, is peculiarly liable to suffer from the action of mephitic and poisonous states of the atmosphere.

As to the question whether 400 cubic feet of space be sufficient for a prisoner, I think the answer must be—it is not. The committee which lately sat in Calcutta on prison management in India have decided that the *minimum* should be $9 \times 6 \times 12 = 648$ cubic feet. This is, I think, very much nearer the mark; but they have taken a far more important step than simply increasing the cubical space for each man: they have decided that superficial space must be held in account in fixing the number that a jail is to hold. This has been endorsed by the Supreme Government, and the question may, therefore, be considered finally disposed of.

It will be observed that I have not mentioned any of the conditions which peculiarly contribute to render overcrowding by human beings such as those who constitute the chief portion of our prison population especially injurious. I do not think the point requires any such additional support; and the bare statements of Dr. DeRenzy and Dr. Gray will be sufficient to carry conviction to the mind of every one, that there existed a state of things sufficient to produce the physiological conditions incident to overcrowding of human beings.

Massing of men *per se* favorable to the production and development of epidemic sickness.

I cannot pass by unnoticed another condition, existent in some of our jails, which I believe to be provocative of disease. Large bodies of men are collected together, for instance in the Lahore Central Jail, and the jails at Umballa, Rawul Pindee, and Mooltan. I believe that the mere massing of men together in large bodies is *per se* predisposing to disease. Of course, wherever you have large numbers of men congregated, there you are likely to have a deficiency of due sanitation; but it is not to this that I allude. My opinion is that the bare congregation of large numbers of human beings together is favorable to the production and development of epidemic sickness, no doubt in an inverse ratio to the amount of

sanitation kept up. I cannot at this moment call to mind all the facts and arguments bearing on this point; and, therefore, I can only advance it with the weight of an individual opinion, but it is a doctrine which I should, from *a priori* reasoning, on physiological grounds, be prepared to receive. There is, however, one statement to which I may refer, and which would appear to support my opinion. In the sixteenth report of the Registrar General, will be found a return concerning the death rate in England and Wales for ten years, (1841—1850) excluding the London districts; and from this it would appear that as the population per square mile increases, so does the rate of mortality per thousand.

Why should the disease arise in one year more than another, for the conditions were existent in other years.

But it may be said that, if this degree of overcrowding, improper feeding, and cold, existent in every year, have not produced the same amount of sickness and mortality we have lately witnessed, why should they have done so now? It is difficult clearly and finally to answer this objection; but that certain conditions, which we know to be generally productive of disease, will, for a considerable time, exist without causing sickness, and suddenly, no *appreciable* change in, or addition to them having taken place, burst forth with wide-spread and deadly influence, is a fact that is consistent with the knowledge of every observer.

Reply to the above objections.

Other points to be considered in connection with the origin of the fever.

In connection with the origination of the fever, there are two other points to be considered, the pre-existence of a malarious fever in the Lahore Central Jail, and the question of infection as regards the Mooltan jail.

Epidemic of malarious fever in the Lahore Central Jail.

When Dr. Penny received charge of the Central Jail in April, it was healthy; and he states that a simple malarious intermittent fever commenced in September. I think it began in August, because there was an increase of sickness in that month, and because it is more in accordance with my own experience to find it commencing then. It does intensify in September, and towards the end of that month, and the beginning of October, when we have the cold nights coming after the hot days. In old and feeble cases, the symptoms assume a typhoid character; but I have generally found intermittent fever commence earlier than September. Now, this fever continued its course, and the cold weather came on and existed with it. The type of the disease then changed.

A malarious poison may assist in the production of an infectious disease.

I have before said I can understand this. I have observed in individual cases almost every year a distinct and well-marked change, when intermittent fever has not been shaken off before the access of the cold season, and this when there has been no epidemic of intermittent; then I cannot find it difficult to understand how a malarious poison, which has been acting with great fury on a body of men epidemically, should, with the assistance of other circumstances, cold, improper food, and overcrowding, bring about a state of things which would result in the production of an infectious poison. I do not mean that the malarious poison *passes* into an infectious poison—I do not think it does—but it takes part in the production of the latter; and this, I believe, to be the true explanation of what occurred in the Lahore Central Jail.

Infection as regards Mooltan jail.

I come now to consider the question of infection as regards the Mooltan jail. I will not discuss whether the disease was infectious or not in its later development. I believe it was infectious, though at first I did not think it so, for I was not in such intimate contact with it as to be able to grasp all the bearings of the disease. It is true I went to the Lahore jail daily, but still the infectious nature of the malady did not strike me; and the Superintendent of the

jail himself, who was of all the most competent to judge up to the last, questioned very strongly its being infectious. Dr. Gray has in his admirable report discussed very fully the question of contagion.

But, although I believe in the infectious nature of the disease, I cannot concur in the opinion that what occurred in the Mooltan jail is due *solely* and *entirely* to the arrival of the prisoners from Lahore for transportation. The circumstances attendant on the outbreak of the disease are the following. I copy from Dr. DeRenzy's report:—" On the 25th of December, a party of convicts arrived from Lahore. They were in a very wretched state. On the last march into Mooltan, they had been caught in the rain, which fell very heavily the greater part of the day. From ten to fifteen of them were in a very precarious state on their arival ; two died within a few hours. Five were dead before the end of the month, and six more, eleven altogether, before the end of January. They suffered from a low fever, the symptoms of which will be described hereafter—" (already given) " a fever of the same character spread gradually but steadily through the jail. From this date till in the beginning of March it attained its greatest development."

Opinion that the epidemic in Mooltan jail was not wholly and solely due to infection.

Circumstances attendant on the outbreak.

It will be as well to bear in mind one of the most clearly established laws relating to the action of blood poison, viz., the action of a poison on individuals is in an inverse ratio to the power of resistance in those individuals, that is to say, if two individuals be exposed to a poison, one shall suffer from it and the other escape ; not because the poison has acted more powerfully on the one than on the other, but because the one being in good health, has had greater power of resistance than the other who was not in good health.

Law relating to the action of blood poison.

In November a batch of fifty convalescents were sent from the Central Jail to Googaira. No extraordinary care was taken to keep them separate from the other prisoners in that jail, but no epidemic broke out in it. Now, if the fever which occurred in the Mooltan jail were due wholly and solely to a simple translation of the poison from Lahore to Mooltan, then there ought to have raged a similar disease in the Googaira jail. The conclusion must, therefore, be arrived at that the poison of the fever in the Lahore jail was communicable only under certain conditions which existed in the Mooltan and not in the Googaira jail, or that the health of the Googaira prisoners was such that their power of resistance was greater than the power of the poison, and that the converse was the case with the Mooltan prisoners.

50 convalescents sent in November to Googaira jail, but no epidemic occurred there.

Inference to be drawn from this.

Dr. DeRenzy says :—" There was a concurrence of conditions towards the close of 1863 which greatly favored the action of infection, and must be regarded as predisposing causes of the epidemic which ensued.

Conditions existing in the Mooltan jail favorable for the spread of infection, if not for the generation of an epidemic.

1st.—The general health of the people of the district was much below par. The last two years have been seasons of very heavy rain and extensive inundations, and intermittent fevers were in consequence very prevalent with the effect of greatly impairing the public health.

2nd.—Towards the end of the year, there was a great and sudden increase in the number of convicts. In the months of October, November, and December, there were 365 new admissions into the jail. Such a sudden accession of numbers would have been under any circumstances attended with some danger to health, especially when so many of the new admissions were already affected with disease. It was particularly unfortunate, too, that the increase of numbers occurred in the cold weather.

The people of this district hardly ever bathe in the cold months, so that at that time they are most offensively dirty in their persons.

The rapid and close aggravation *(sic in original, query aggregation)* of so many persons, in such a condition, still suffering from the mental depression arising from recent imprisonment, and the fresh severance of home ties, would indeed in itself perhaps be sufficient to generate an epidemic; but, at all events, no circumstance can be conceived more favorable for the growth of infection already existing.

On the 31st of December, the average superficial area in barracks allowed for each convict was twenty-seven feet, the cubical space was 440 feet; there was a space of nine inches between the convicts as they lay on the ground.

3rd.—The development which the epidemic assumed in February is, I think, referrable to the very unusual cold which prevailed in that month. On the 16th February the thermometer fell to 25°F., and on the 29th February it marked 33°F.

The first two days in March were also very cold. Such a low temperature, continued for many hours of the night, was very trying to convicts whose constitutions had been impaired by sickness or imprisonment, and who were but poorly provided with warm clothing. No result was more likely to follow than congestion of the liver, as actually occurred.

All through the cold weather the convicts complained bitterly of cold. I believe the clothing was not so good this year as it usually is, but, however that may be, I never went round the wards in December, January and February without dozens of convicts begging for an extra blanket. There can be no doubt that the unusual coldness of the season, and the insufficient clothing of the convicts, were very energetic predisposing causes of the epidemic.

It is evident from the above statement that the Mooltan jail was ripe for the spread of epidemic disease, and it is quite a question for argument whether it was not in a condition "to generate an epidemic," as suggested by Doctor DeRenzy.

Infection probably was the exciting cause of the epidemic in Mooltan.

I will not deny that the advent of the prisoners for transportation, from Lahore, on the 25th of December, was probably the spark to kindle the flame; but the fuel to keep up the blaze was abundant in the jail before their arrival. Had the prisoners at Mooltan been surrounded by other influences than they were, they would, we may argue, have been able to resist the action of the poison.

How did the fever originate in the jails of Goojranwalla and Rawul Pindee and the female penitentiary?

Again, on the point of infection being the sole cause of the sickness in Mooltan, how did the fever originate in the jails of Rawul Pindee and Goojranwalla and the female penitentiary? We have no evidence of any communication between their prisoners and the Lahore Central jail.

Fever in the Goojranwalla jail had no connection with that in the Sealkote jail.

It may be attempted to trace the origin of the fever in the Goojranwalla jail to the arrival of some prisoners there in the early autumn of 1863, or rather late summer of that year, from among prisoners who had been in the Sealkote jail, where a severe type of fever had been prevailing in May; but this can never be maintained with any pretence to reason, because the interval between the arrival of these prisoners and the breaking out of the disease, was far too great to give any grounds to base this supposition on, and prisoners from the same body were sent to Jhelum, Goojrat, and Goordaspoor, and no epidemic occurred in either of those jails.

Perhaps, neglecting all the causes of disease which I have stated to exist in the jails themselves, it may be said that these out-bursts of sickness will occur without any assignable cause. I cannot see why, if certain causes, which will produce certain results are traceable, when such results happen, we should pass over unrecognized these causes, and consider the results to be brought about by others which we cannot trace. If this is to be done, then the causation of disease must cease to be matter of scientific investigation.

Objection to epidemic being attributed to unknown causes, when causes sufficient to produce them can be found.

Having, then, considered the various points which I have laid before you, both as regards the character of the sickness and the conditions existent in our jails prejudicial to health; I am of opinion that the fever which has lately prevailed in the jails of Lahore, Goojranwalla, and Mooltan, and the female penitentiary, was, if not identical with, very closely allied to that recognized in Europe as relapsing or famine fever; that the causes predisposing thereto, were improper feeding and overcrowding; that cold materially aggravated the severity of the disease, if it was not a predisposing cause; and that, in the case of the Lahore Central Jail, the pre-existence of an epidemic of malarious fever, and in the Mooltan jail infection, were the exciting causes; but that in the Goojranwalla jail and the female penitentiary the exciting cause cannot clearly be traced,

Opinion as to the character and cause of the sickness which lately prevailed in the Lahore Central, Goojranwalla, and Mooltan jails, and in the female penitentiary.

I append a statement showing the sickness and mortality in the different jails.

The measures which were adopted to meet the sickness, and the treatment pursued are fully detailed in the reports. I need not go into the treatment of the individual cases; but a review of the steps taken with reference to the general body of prisoners, will be appropriate.

Measures adopted to meet the sickness.

The first step taken as regards the Central Jail was, at the suggestion of the Superintendent, to increase the amount of ghee and vegetables allowed the prisoners. The food was served out at an earlier period of the day; and, at the recommendation of the Civil Surgeon (Dr. Farquhar), the cold weather clothing was served out before the regular time for its issue (1st October). Towards the end of October (the Superintendent says the last week), I arranged with him the conversion of some of the barracks of the 2nd circle into hospitals for the sick and convalescents, as the numbers in the hospital was becoming too great, and I considered it crowded. Arrangements for lighting fires during the night in the hospital were also made, and straw was procured for such to lie on as had not charpoys. I also recommended, and it was carried out, that for a few hours during the day such of the convalescents as could go, should be sent into the jail garden; and the Superintendent of the Jail should give the convalescent prisoners a more liberal diet. Soup was made and distributed upon this at the discretion of the Superintendent. The dietary of the sick was left entirely to him; and what to him seemed good and fit was given. On the 6th of December, the Civil Surgeon of Lahore, Dr. Farquhar, visited the jail, and advised the prisoners being moved into camp, and the jail cleaned and fumigated. Permission to move was obtained. There was, however, a difficulty raised about the necessary guard, and the move was delayed. On my return to Lahore from the jails in the direction of Delhi, I opposed the move into camp. I will give my reason for doing so presently. Dr. Farquhar still urged the advisability of moving into camp. It was, therefore, agreed to ask Dr. Scriven, the Principal of the Medical College, to meet us at the Central Jail. This was done on the 15th of December. Dr. Farquhar then stated his views, and I did mine against the move. Dr. Scriven was in favor of moving some of the men, in order to give more room to those left behind; he, however, remarked that he did not expect any great result

Lahore Central Jail.

from this step, but looked upon it rather as an experimental measure. The majority being thus against me, I gave way, and the move was made on the 20th of December. Five hundred of the healthiest and most able-bodied prisoners were sent into tents at Shah Jamahul. I had tried with the Superintendent of the Jail to get some building to place these men in, but from various causes had not been successful. Dr. Penny had so much to do in the Central Jail that it was impossible he could manage the work of the camp in addition to that of the Jail; I, therefore, considered it my duty to assist him, and I offered to take the camp entirely off his hands—not to supersede him in any way, for I did every thing in his name, but simply to help him. This offer he accepted. At the time this move was made, the weather was bitterly cold. Soon (the next day) the prisoners in camp began to suffer in the same way as they had in Jail; and, on the 2nd of January, I came to the conclusion that those who were moved into camp had gained nothing by the move. There were on that date sixty in hospital—ten admitted that morning. The men had straw to lie on, and extra blankets, but the cold was intensely felt by them. I used to find the men, when I went up of a morning, quite stiff with cold; and I after some days would not have the prisoners disturbed till the sun had fairly risen and exercised some influence on the atmosphere. I felt the cold myself very much, and it is no exaggeration, but the statement of a simple fact, when I say that frequently when I got up to camp and took my gloves off, I could not write. It was suggested then that the camp should be moved to another locality; but to this I objected, because changing the position of the camp would not change the temperature of the weather, and the position of the camp was a remarkably good one in all respects. The prisoners were, as we could get no building to put them in, moved back to Jail; and measures directed towards keeping them warm, giving them as much space as possible in barracks, and a more liberal diet, were adopted. Labour had been reduced to a minimum, and the prisoners were not allowed to leave their barracks in the morning till after sunrise. An increase in the temperature of the weather was watched for; and, as soon as it came, a move into camp was again made. On 6th March, 1,196 prisoners were moved into tents at the old camping ground at Shah Jumahal. The sick and convalescents were moved into the old Golah Serai Jail; which was for the purpose emptied of the Thugs. The Jail was then left empty, and immediately its thorough cleaning and fumigation were set about. The walls were scraped, the floors dug up and removed,—fires of green wood were kept burning in the buildings for a considerable time with the doors closed; and every means was adopted to effect a thorough cleansing of all the Jail buildings. On the 9th April, the weather becoming hot, the prisoners were moved back to Jail very much improved in health, whether from the move, or from the dying off of the epidemic, as suggested by Dr. Gray, or from both combined, may be a matter of opinion.

I will now state why I opposed the move of the prisoners into camp. It was because I believed that their condition would be very powerfully influenced for the worse by the cold. They must go into tents, common sepoy pauls, and fires in a prisoner camp were out of the question. This was why I opposed the move, and I conceive the result justified my objection.

Mooltan.

At Mooltan very similar measures were adopted; but the sick were separated very early in the epidemic from the healthy prisoners and sent to Wuzeerabad—a fine large building, formerly the residence of Dewan Moolraj. This was doubtless a great advantage gained; but it did not prevent the spread of the sickness, and this is a point of importance bearing on the question of the existence of the disease being dependent on infection solely. So soon, therefore, as the cold decreased, the prisoners were moved into camp at Bukurabad, and from this they derived great advantage. As in the case of the Central Jail, advantage was taken of the absence of the prisoners to thoroughly clean and fumigate the jail.

Goojranwalla.

At Goojranwalla, the sick were moved out on the 2nd February to the Government Charitable Dispensary. I objected to this at the time, and I consider it ought not to be done in future, for more than one reason. If the disease prevailing in the jail be an infectious disease, this is a good and efficacious mode of spreading it; if it be not infectious, the dispensary accommodation should not be taken up by prisoners, and the admissions of prisoners to the institution may mar its popularity; but the object of the move was good. The medical officer objected, and I think rightly, to the prisoners going into tents at that season, and he had nowhere else to send them. Labor was reduced to a minimum, and an increase of diet in the shape of ghee and parched gram was given to all the prisoners. On the 3rd and 5th of March the prisoners were moved out to an old serai at Emnabad, and on the 24th March to huts at Futta Mundee and Loniawalla. From this date they continued to improve; and at the close of April, the camp was broken up and the men returned to jail—to thoroughly clean and fumigate which advantage had been taken of their absence.

The Female Penitentiary.

In the female penitentiary the same description of measures were taken; but, as the fever assumed a severe type later in the season, the move from the jail was more prompt, inasmuch as there was not so much cold, and the women being comparatively few were more easily dealt with. On the 20th March, the healthy prisoners were sent to Shahdera, and the sick and convalescent to the building called the Leper Asylum (it has not been used as an asylum for lepers for some time past), the dietary was also improved. These changes seemed to exert a beneficial influence, and the women improved very much in health. The epidemic was very much less virulent in this jail, whether in consequence of the early date at which the move was made or from other causes, cannot be ascertained with any certainty.

I would now ask leave to suggest such measures as I think are indicated as necessary by the occurrences we have just been considering; and are likely to prevent the recurrence of similar sickness.

Dietary.

I. The first point is the diet. This has already been dealt with; and, with the sanction of Government, an increase has been made experimentally for three months. There is no need to further notice this, except to remark that I consider three months far too short a period to enable us to form any fair opinion on the subject. At least a year, with its various changes and seasons acting on the prisoners, should be allowed before any conclusion can be correctly drawn.

Space.

II. The prevention of overcrowding and deficient allowance of superficial space, has been considered and secured by the recommendations of the committee which lately sat in Calcutta on prison management; and, in accordance with this recommendation, I shall almost immediately lay before you definite proposals regarding the accommodation in our jails at present, and that necessary to carry out the views of the committee.

Clothing.

III. The winter clothing for prisoners should be prepared and got ready by the 1st August; and, where it is considered by the medical officer necessary, increased clothing, either in the shape of extra blankets, pyjamas, or anything else, should be issued—a report for the information of Government being submitted to the office of the Inspector General of Prisons. All clothing, so soon as it be taken, at the close of the season, from the prisoners, should be thoroughly baked ? and washed before being returned to store.

IV. That wherever they do not already exist, shutters, which may be closed at will, be placed to the grated doors and windows of the barracks.

Shutters to grated doors.

V. That no prisoners be either transferred from or received into a jail in which there is any unusual sickness, whether the sickness be infectious or not; and that whenever a transfer is made the medical officer shall send with the prisoners transferred, a certificate to the effect that there is, and has been for at least 21 days, no unusual sickness or case of infectious disease in the jail.

Prisoners not to be transferred from or received into a jail where unusual sickness is prevailing.

VI.—That whenever prisoners are sent to Mooltan for transportation, they should for at least 14 days after their arrival, if there has been no sickness among them on the march, be kept entirely separate from all other prisoners in that jail; if there has been sickness among them on the march, the medical officer shall decide whether it be necessary to keep them longer than 14 days separate from all other prisoners.

Prisoners sent to Mooltan for transportation to be kept separate from all other prisoners.

The want of a building to which in case of epidemic disease breaking out a portion of the prisoners of the Central Jail may be sent was severely felt. If any other arrangements can be made for the thugs, I think, with Dr. Gray, the old Gola Serai jail should be retained for that purpose.

Want of a building to which Central Jail prisoners may be removed in case of epidemic.

In conclusion, I would beg your attention to the remarks made by Dr. Gray as to the conduct of the native establishment of the jail during the prevalence of the epidemic; and I must myself bear testimony to the untiring energy of the various medical officers. I was in almost daily communication with Dr. DeRenzy during the time the sickness prevailed in his jail. I know that nothing skill or energy could do to arrest the disease was left undone; and, on my visiting Mooltan, I found that any suggestions I could have made had been already anticipated. I have, in my report for the jails for 1863, brought to notice Dr. Penny's exertions. Dr. Gray has worked with equal energy and skill, and the very able report he has submitted has enabled us to gather a fair idea of the disease which prevailed and the causes which led to it. Dr. Wikeley, too, at Goojranwalla, spared no exertion or labor in the performance of the duties which devolved on him in consequence of the epidemic among the prisoners.

Conduct of native establishment of Central Jail.

Exertions of Medical Officers.

I have the honor to be,

Sir,

Your most obedient servant,

A. M. Dallas.

Inspector General of Prisons Punjab.

P. S.—The Sanitary Commission in Calcutta have called on me to furnish reports on the late epidemic of fever which has prevailed in certain of the jails of the Punjab. I, therefore, beg to suggest that these reports, together with this letter, or copies of the same, be sent to the Commission.

Sickness and Mortality in the Lahore Central Jail during the prevalence of fever in it.

Accommodation.	Year.	Month.	Daily average number in jail.	Number admitted to hospital.	Daily average number of sick.	Died.	Sick to strength per cent. admissions.	Sick to strength per cent. daily average.	Deaths to strength per cent.	Deaths to admissions.
2456	1863	August, ...	2018·83	209	76·67	18	10·35	3·79	0·89	8·61
		September, ...	2006·16	231	94·60	34	11·51	4·71	1·69	14·72
		October, ...	1948·09	195	125·13	42	10·01	6·42	2·15	21·54
		November, ...	2012·70	415	186·70	63	20·61	9·27	3·13	15·18
		December, ...	1816·13	598	261·74	84	32·93	14·41	4·62	14·04
	1864	January, ...	1692·22	497	348·38	58	29·37	20·59	3·43	11·67
		February, ...	1598·41	274	248·34	67	17·14	15·53	4·19	24·45
		March, ...	1490·51	90	93·20	32	6·04	6·25	2·14	35·55
		April, ...	1441·63	67	47 86	8	4·65	3·32	0·55	11·95
		Total, ...	1780·52	2576	164·74	406	14·467	9·25	22·80	15·79

Sickness and Mortality in the Mooltan Jail during the prevalence of fever in it.

Accommodation.	Year.	Month.	Daily average number in jail.	Number admitted to hospital.	Daily average number of sick.	Died.	Sick to strength per cent admissions.	Sick to strength per cent. daily average.	Deaths to strength per cent.	Deaths to admissions.
1069	1864	January, ..	755·35	97	35·61	12	12·84	4·71	1·59	12·37
		February, ...	727·52	231	55·45	11	31·75	7·62	1·51	4·76
		March, ...	486·36	117	102·03	27	24·05	20·98	5·55	23·08
		April, ...	474·53	66	45·36	11	13·91	9·55	2·32	16·66
		May, ...	509·38	61	24·19	7	11·97	4·75	1·37	11·47
		Total, ...	590·63	572	52·53	68	96·84	8·89	11·68	11·88

Sickness and Mortality in the Goojranwalla Jail, during the prevalence of fever in it.

Accommodation.	Year.	Month.	Daily average number in Jail.	Number admitted to Hospital.	Daily average number of sick.	Died.	Sick to strength per cent. admissions.	Sick to strength per cent. daily average.	Deaths to strength per cent.	Deaths to admissions.
513	1864	January, ..	339·58	43	11·8	6	12·66	3·47	1·76	13·95
		February, ..	319·10	125	41·6	8	39·17	13·03	5·64	14·40
		March, ..	312·48	148	45·8	19	47·36	14·65	6·08	12·84
		April, ..	305·77	63	37·13	7	20·63	12·14	2·29	11·11
		May, ..	298·29	22	9·42	2	7·37	3·16	0·67	9·09
		Total, ..	315·04	401	29·15	52	127·60	9·22	16·50	12·97

Sickness and Mortality, Female Penitentiary Lahore, during the prevalence of fever in it.

Accommodation.	Year.	Month.	Daily average number in jail.	Number admitted to Hospital.	Daily average number of sick.	Died.	Sick to strength per cent. admissions.	Sick to strength per cent. daily average.	Deaths to strength per cent.	Deaths to admissions.
239	1864	January, ..	180·03	34	12·87	2	18·88	7·15	1·11	5·88
		February, ..	172·51	58	19·	1	33·62	11·01	0·58	1·73
		March, ..	165·19	48	41·19	6	29·06	24·93	3·63	12·50
		April, ..	159·03	14	54·46	1	8·80	34·24	0·63	7·14
		May, ..	156·64	19	40·80	2	12·13	26·04	1·27	10·52
		Total, ..	166·68	17·3	33·66	12	103·73	20·19	7·20	6·93

Report on an Epidemic of Relapsing Fever which occurred in the Lahore Central Jail during the latter part of 1863, *and beginning of* 1864.

1. Dr. Penny was Superintendent of the Lahore Central Jail from 9th April 1863 to the 30th January 1864, when he handed over charge to me. It will therefore be necessary for me, in reporting on the fever that raged in this jail during the latter part of 1863 and beginning of 1864, to have recourse to the history of the disease as furnished by Dr. Penny in his Sanatory Report for 1863.

Dr. Penny's account of the accession of the fever.

2. Regarding the general health of the prisoners in the beginning of 1863 and the accession of the epidemic, Dr. Penny remarks "I found the jail "exceedingly healthy when I took over charge in April, and "the health of the prisoners continued good till the middle "of September. Up to this time the hospital remained comparatively empty, one ward being "set apart as usual for cases of senile decay, and I have not a single remark to make on the "cases up to this period."

"The epidemic or rather endemic of fever invaded the jail about the beginning of "September, and when I returned from special duty on the 19th of that month the whole of "the inmates of the jail, including the contingent guard and the police, from one end of the "jail to the other, every man had been attacked with ague or intermittent fever. The indivi- "dual attacks were not severe, but the universal spread was remarkable. The weaver by his "loom shivered and laid down for an hour, had his hot stage, and perspired and was "apparently quite well. The carpet weaver, the durree makers, the men at work in the "garden, the Deputy Superintendent, the Darogah, each and all had breathed the poison of "malaria. From that time to the present (January 1864) we have had the most tremendous "amount of illness and the highest rate of mortality ever known in this jail."

Quinine of the greatest service at the time of invasion of the epidemic.

"At the time of invasion quinine was of the greatest service; accordingly, it was "arranged that bottles of ready made solution, which I made "myself, five grains to the ounce, should be freely administered "through the jemadars to every prisoner. I borrowed from "the Meean Meer hospital, and I immediately obtained fresh supplies from the Sealkote "depôt. The quinine was remarkably effectual, and there was a great diminution of the "disease."

"I obtained your sanction to the increase of ghee and vegetables. The food was "served out early to the prisoners, and they were allowed the cold weather clothing by the "recommendation of Dr. Farquhar before the usual time."

Progress of the disease from 15th September to end of October.

"From the 15th September to the end of October "the type of fever was purely intermittent, recurring in "paroxysms and amenable to quinine."

"About the end of October or beginning of November, as the weather became "gradually colder, the type changed. Instead of a complete intermission there was only an "abatement in the febrile stage. The fever passed from an intermittent to a remittent form, "in which there were distinct exacerbations of the fever, followed by an abatement of all the "symptoms; the pulse never returned to the natural state, the exacerbations were neither "definite in time nor in duration. Excepting some few cases of sudden collapse, the type of "fever was unaccompanied with bad symptoms. There were the secondary affections of "pleuropneumonia, but not the slightest evidence of cerebral or bowel disease."

During the month of November and December the fever has attacked and re-
" attacked the whole body of prisoners, proved fatal to a great many, and debilitated the rest
" to a fearful extent."

" In the month of January, the type of the fever has again, curiously enough,
" with the change of the weather from intense cold to a milder temperature, altered again;
" the type has become intermittent once more, the cases present a distinct cessation in the
" febrile paroxysm, and there is a perfect intermission; there is not the same extent of fever:
" the fatal cases are much fewer."

3. When I took over charge from Dr. Penny on the 30th January, the sick and convalescents numbered respectively 311 and 275; the total number in jail was 1677, so that 1 in every 2·89 prisoners might be said to be suffering from the prevailing sickness or its immediate effects.

Numbers of sick, convalescent and healthy, 30th January 1864.

4. If the plumpness, general aspect, and apparent state of nutrition of the prisoners in the barracks were alone to be taken into account, they could not as a body be pronounced unhealthy. Here and there might be detected a prisoner in an anaemic and debilitated condition, who had lately joined from the convalescent gang, and who complained of a feeling of weakness and exhaustion; but such was not the state of the bulk of the prisoners not on the sick or convalescent list.

Appearance of the prisoners in the barracks.

5. After assuming charge I frequently examined the prisoners with the view of ascertaining whether a scorbutic taint was prevalent among them. It certainly existed in a small proportion of cases, but as a body the prisoners did not present the symptoms usually attendant on this dyscrasia.

Was a scorbutic taint generally prevalent?

6. The convalescents were in a very miserable and emaciated condition, some suffering from diarrhœa or dysentery, others complaining of severe muscular or arthritic pains, and all presenting evidences of extreme debility and severe recent illness. Many had been long in hospital, and counted the duration of their illness, not by days or weeks but in a good many instances by months.

State of convalescents.

7. On first examining the sick, one could not fail to be struck by the great state of prostration to which those admitted under fever were rapidly reduced. Those suffering from an attack had a sense of weight and oppression about them, and generally laboured under the most gloomy forebodings as to the termination of the disease.

State of sick.

A few of them were deeply jaundiced, and a good many presented a more or less jaundiced tinge; another painful observation I made was, that almost without exception those who had got over the first attack of fever, were labouring under some sequela, bronchitis, pneumonia, diarrhaea, or dysentery being the most common forms; and to such a state of emaciation and debility had many been reduced that it was evident, that although they might linger on for some time, they must eventually succumb.

8. When I joined the appointment in the end of January, I believed that the disease I had to deal with was entirely due to a malarious poison; I was not, however, long in charge before I began to have doubts regarding the correctness of this opinion, and after closely observing the fever, especially as it occurred in fresh admissions, by the end of February I had become convinced in my own mind that as it generally occurred it was of a continued type and communicable from one person to another. That a conclusion of an opposite

Observation of the disease convinces me that the fever is of a continued type.

character was arrived at by Dr. Penny is shown by the extract made from his sanatory report of this jail for 1863, and I am well aware that great weight ought to attach to Dr Penny's opinion, watching as he did, in the most painstaking manner, the course of the disease over a period of four or five months.

9. That different views should be entertained respecting certain characters of an epidemic, such as has visited the Lahore Central Jail, will not be matter of surprise to any one who is acquainted with the literature of fevers as they occur in cold climates, and knows that after years of the most patient investigation, different observers have arrived at opposite conclusions regarding some of the most important points, *e. g.* the contagious or non-contagious character of certain fevers, and the identity or non-indentity of certain forms; and this too, notwithstanding that the different observers have drawn their conclusions from facts noted during the same epidemics.

The fever commenced as an intermittent.

10. No one can, I think, doubt from Dr. Penny's description that in the beginning of September (from the hospital records I would place the date as early as August), there was an outburst of intermittent fever among the prisoners. It was very prevalent in August and September all over this part of the country. In the district of Googaira, to which I was then attached, whole villages were prostrated with it, and there was the most urgent demand for its antidote, quinine. The heavy rains and unusually large inundations in July and August were followed by a powerfully hot and scorching sun, circumstances favorable to the decomposition of decaying vegetable matter and the production of malaria. That the fever thus originated did in some cases later in the season change its type from an intermittent to a remittent form was also a fact that came under my observation. It was a change that might have been expected to result when the nights became cold and damp and the range of temperature during the 24 hours increased.

Cessation, by the beginning of November, of malarious fever among the free population, while the fever goes on increasing in the Lahore Central Jail.

11. But by the beginning of November this malarious fever, so generally prevalent in August and September all over this part of the country, had, so far as I can learn, disappeared; and there was no general sickness among the free population. No such cessation of fever occurred among the prisoners of the Lahore Central Jail. The sickness on the other hand became intensified, till in the month of December, it reached its acme in a death rate of 87 during the month.

Opinion that the malarious fever in the Jail was replaced by one of a continued type.

12. Although I consider that in the majority of cases, the fever after I joined was of a continued character, and attributable to an animal poison, I will not pretend to say that some of the cases that occurred were not due to malaria. My opinion however is that malarious fever from being the prevalent type at first, had by the time I assumed charge almost entirely disappeared and had been replaced by one of a continued character. The connection between the two types I shall not here discuss, but shall proceed to describe the symptoms &c., of the fever, stating the grounds on which I formed the opinion just expressed.

Symptoms on admission.

13. The patient when admitted into hospital generally entertained the most gloomy apprehensions as to his condition, anxiety being evidently depicted on his countenance. When asked as to the seat of pain, he would sometimes refer to his loins, limbs and head; but more frequently he would state that his internal organs, liver, kidneys &c., were rotten or burnt up. With

Premonitory symptoms.

regard to the existence of premonitory symptoms, some admitted that they had felt more or less ill in the barracks for two or three days, and that at a stated time, a distinct shivering fit had occurred; others

however affirmed that only a few hours ago they had become suddenly warm and feverish, their head giddy, &c., but that no premonitory symptoms or shivering had been experienced.

Physiognomy.

The countenance, presenting an anxious, but usually not a dull or stupid expression, was in many cases covered with a more or less general flush; the conjunctivæ, as a rule, were not greatly if at all congested, but the very generally jaundiced tinge was most observable; this tinge in a very great number of instances became developed into a deep yellow hue; the tongue was deeply yellow—or white—

Tongue.

furred, and very often even on admission had already dried at the tip; if it had not, in bad cases a triangular piece at the tip soon became dry and brown, the process extending backwards at first along the centre. Instead of the furred tongue there were not a few instances in which it became dry, glazed, and

Skin.

shining: there was usually very intense heat of skin, which was also dry. I very carefully looked for a rash, but none was even discovered to exist. The pulse was usually at first full and frequent 100—120; it soon

Thirst.

became weak and compressible, retaining its frequency. Thirst was a most constant symptom.

Respiratory movements.

The respiratory movements were generally quickened in proportion to the state of the pulse.

State of nervous and muscular systems.

There was usually from the first very great muscular and nervous depression; the patient was quite conscious, but did not wish to be disturbed; often there was frontal headache or vertigo, the prisoner stating that on attempting to lift his head it appeared to whirl round; the tongue was frequently protruded in a series of tremulous jerks, and the arm when raised trembled like an aspen leaf. In very few cases was there impairment of the mental faculties, at least till towards the termination of the disease.

Vomiting.

Vomiting was not unfrequent; in some instances it was severe, but as a rule it was not persistent; when it did occur it

Gurgling on pressure over the epigastrum.

was at the commencement of the disease. There was often more or less gurgling on pressure over the epigastrum; pain was also generally felt there on pressure, though not complained of before.

Enlargement of liver and spleen.

Enlargement of the liver and spleen was most frequent; the bowels were usually constipated, but great care had to be

State of bowels.

taken in the medicine used as aperient,—diarrhœa being most liable to supervene.

State of urine.

The urine was scanty and high coloured, the patient supposing that it was mixed with blood.

14. The above is a general outline of the symptoms as observed on the patient's admission. They did not of course all present themselves in each case; and when present, they varied considerably in severity, but there were numerous admissions which in every particular corresponded with the account given.

Progress of cases that proved fatal from 4th to 7th day.

15. The majority of the fatal cases that did not succumb from some sequela were protracted till the 4th, 5th, 6th or 7th day. In these the severity of the symptoms described became aggravated, the tongue from being white—or yellow—furred became dry and brown: sometimes quite black and deeply cracked; the pungent heat of skin remained; the pulse soon lost its fulness, becoming weak and thready; prostration increased; sordes collected about the teeth and lips; the patient would in all probability become torpid, but retain his senses till within a few hours of death, when the torpor sometimes passed into a state of coma, under which he would sink.

16. It is worthy of remark that the last mentioned stage, viz. that of coma or insensibility, when it did exist, was not as a rule protracted. Often did I examine, and receive rational answers, from a patient in the evening, who I was informed on my visit to the hospital next morning had become insensible during the night and died.

State of Coma or Insensibility short, when it occurred.

17. From statement given in Appendix D., however, it will be seen that not a few died under one, two, or three days after admission into hospital. These were the cases that exhibited the greatest sense of weight and oppression, and my opinion is that the virulence and strength of the fever poison paralysed the ganglionic system of nerves, thus stopping the action of the secretory and excretory organs and bringing on death by collapse. The proportion of such rapidly fatal cases was less after I took over charge than it was in the two or three previous months.

Cases that proved rapidly fatal.

18. In cases that did not prove fatal in either of the ways described in *paras.* 21 and 23, the original symptoms remained unabated for a period varying from 5 to 9 days, (the average being 6 or 7). During the twenty-four hours, and from day to day, there was no distinct remission in the febrile symptoms. After the second or third day the tongue usually became dry, and in many instances brownish; the pulse smaller and weaker; the patient, perfectly sensible, complained of distressing thirst, and the pains in his bones and joints; at the end of the above mentioned period (5 to 9 days) there was a sudden cessation of the febrile symptoms, the crisis being in a good many instances ushered in by profuse perspiration, but much more frequently by a discharge of copious watery stools. The pulse became slow, tongue moist, the skin lost its pungent heat and great dryness. With the exception of a general feeling of weakness and pains in the limbs, joints or muscles, the patient now expressed himself well, and if his appetite had gone—which was not invariably the case—it returned, and he was clamourous for food. In this state of apparent convalescence he would remain for several days (from four to eight or nine) when all the original symptoms presented themselves and continued sometimes for about the same number of days as the original attack, but generally the period of duration was shorter. The adynamic tendencies before described were observable in the relapse, and many succumbed to it.

Progress of cases that did not prove fatal within 7 or 8 days after admission.

Continuance of symptoms for 5 to 9 days.

Cessation of symptoms. Crisis.

Apparent convalescence.

Relapse.

Adynamic tendencies manifested during the relapse.

19. In not a few instances a second interval of complete quiescence was followed by a second relapse; and a third or even fourth recurrence of the sequence was not unknown.

Second, third, and fourth relapses.

20. The occurrence of relapses was universally noted by the prisoners themselves, who divided their illness into periods which they denominated as their first, second, &c. attack.

Relapses noted by the prisoners.

Dr. Penny, in his sanatory report, points out the same circumstance relative to relapses. He says "in the cases of recovery almost without exception was there a relapse. It became the rule for a second attack to occur, and it was exceedingly common for the native doctor to report that it was the third or even fourth time of recurrence."

Dr. Penny's account of relapse.

At first I administered quinine largely with the hope of being able to ward off the relapse, but it had no apparent effect, the relapse occurred seemingly with as great regularity as if the specific had not been exhibited.

Relapses not warded off by quinine.

21. The absence therefore of remissions in the fever, the definite course it pursued, the occurrence of distinct critical periods, followed by a disappearance of the febrile symptoms, all tended to produce the conviction in my mind that the fever, however it may have orginated, was now (in February) of a continued type, and attributable not to a malarious but an animal poison.

22. The question of contagion will be discussed in subsequent paragraphs.

The type of fever. Was it typhus?

23. It is well known that in former times typhus fever was the scourge of jails both in England and on the continent.

I had little difficulty in coming to the conclusion that typhus was not the type of fever generally prevalent.

Number of cases in which Doctor Penny observed head symptoms.

Dr. Penny states that up to 1st January 1864, out of 1527 cases treated there were only 7 in which head symptoms occurred. In my experience head symptoms were considerably more frequent, but they were so uncommon as to negative decisively the idea that the fever as it generally occurred was typhus. The few instances of delirium were quite masked by the large proportion of cases in which the men retained perfect consciousness during the whole course of the disease. When delirium did occur it was of the low muttering form characteristic of typhus, and I am inclined to believe that there was an admixture, though a small one, of typhus cases.

Was it typhoid or enteric fever.

24. It will be asked was it typhoid or enteric fever? I am convinced it was not. As stated before, the disease tended rapidly to put on a low adynamic form; and it was not uncommon for the collection of symptoms known as "typhoid" to present themselves. But it is well known that the typhoid state may come on in numerous other diseases besides typhoid fever, *e. g.* in pneumonia, typhus, remittent fever, or even after severe accidents or amputations. The mere occurrence therefore of typhoid symptoms did not warrant me to draw the conclusion that the fever was that usually designated enteric or typhoid. Other evidence was wanting.

The occasional supervention of typhoid symptoms no proof that it was typhoid or enteric fever.

Result of post mortem appearances negative the idea that it was typhoid or enteric fever.

25. I had numerous opportunities of making post mortem examinations, and I carefully inspected the intestines with the view of determining the point in question, but in not a single instance did I discover ulceration of the agminated patches of Peyer, which is confessedly one of the most constant and characteristic appearances found on post mortem examination after typhoid or enteric fever.

The solitary glands of the large intestines were not unfrequently ulcerated, and it was not unusual to find congestion of the small as well as large intestines; but these results might have been anticipated, as dysentery and diarrhœa were two of the most common sequelæ.

The symptoms and course of the fever ally it more closely to relapsing or famine fever than to any other form.

26. I thus arrived at the conclusion by the end of February, that the fever as it generally occurred, was not malarious; and that it was not of the typhus or typhoid type observed in cold countries. The symptoms and course of the disease convinced me that it had more in common with the continued relapsing or famine fever which has for some time been recognised as a separate type of fever, quite distinct from typhus or typhoid, and generally occurring in a wide-spread epidemic form.

Points of resemblance between the fever, as it occurred in the Lahore Central jail, and relapsing fever.

27. Even at the risk of repetition, or of anticipating what will be stated more fully afterwards, I shall here name the principal points that in my opinion allied the disease to relapsing or famine fever. The distinctly relapsing character of the disease; the frequent occurrence of the enlarged liver and spleen; the very common

complication of jaundice ; the severe arthritic pains unaccompanied with effusion, and the tedious convalescence ; these were all most observable and very constant symptoms in the late epidemic in the Lahore Central jail ; and have also been recorded as peculiarly characteristic of relapsing or famine fever of temperate climates.

Objection against this being the correct view of the type of the fever.

28. Against this view of the nature of the fever, it may be objected, and certainly on apparently good grounds, that the mortality attendant on relapsing fever has never been found to be great, while the death rate during the late epidemic was enormously high. This will be subsequently alluded to. I may here only remark that there were several antecedent and concomitant causes which I believe in a great measure explain why a disease, which as it generally occurs, is not of a very fatal character, should be attended by a high death rate under the circumstances the fever occurred among the prisoners of the Lahore Central jail.

29. But to return to the disease itself, the symptoms of which were described in paragraphs 19—28. I shall now describe the principal complications, sequelæ and anatomical lesions that were observed.

Complications and sequelæ.

Lung complication.

Bronchitis and pneumonia.

30. Bronchitis and pneumonia were two of the most common complications of the disease in January, February, and beginning of March. During that time the cold was very great, the thermometer in the morning at sunrise often standing at, or even below, the freezing point. By the middle of March, however, lung complication began to decrease, and during the month of April it seldom occurred, and when present, whether as bronchitis or pneumonia, it was not severe in character. In fact, Lung complication was in proportion to, and no doubt in a great measure caused by the cold, and was itself one of the chief causes of the great mortality. The indications of the stethescope, and the copious mucous or muco-purulent expectoration could not fail to detect the presence of bronchitis; but the approach of pneumonia was often most insidious. In very few instances did it occasion sufficient discomfort to the patient to induce him to draw attention to the chest ; a slight cough, but very frequently unattended by the pathognomonic rusty expectoration, might be the only indication that anything was amiss. Laryngitis existed in not a few cases, and usually with it co-existed bronchitis or pneumonia.

Enlargement of liver and spleen.

Jaundice.

31. Enlargement of liver and spleen was exceedingly common, and the occurrence of jaundice has already been pointed out as frequently accompanying the former. Even a deep jaundiced tinge, however, was not found to be a fatal symptom. Recoveries were by no means uncommon in cases in which the whole tissues were apparently thoroughly infiltrated with bilious matter.

Hiccup.

32. In a good many cases hiccup was a most distressing symptom. When it appeared there was almost always enlargement of the liver, the hiccup being no doubt generally the result of reflex action induced by the morbid condition of that organ. This symptom, however, even when severe and persistent, was not by any means indicative of a fatal termination ; cases did well after they had suffered from it almost continuously for three or four days.

Haemorrhages.

Epistaxis.

33. Epistaxis was the most common form of haemorrhage, occurring generally soon after the commencement of the disease, and in some cases it was profuse and controlled with difficulty. Haemorrhage, properly so called, from the bowels, was uncommon. I have noted only one instance of its occurrence from the lungs, but in that case there was the clearest evidence of the existence of phthisis.

34. When death took place at an early period of the disease, in the majority of instances its immediate cause was lung complication. Those who succumbed at a later stage were almost invariably cut off by diarrhœa or dysentery. As stated before, the first attack of fever very frequently terminated in a critical discharge from the bowels; the looseness might continue for two or three days only, or throughout the whole interval up to the period of relapse, when it generally stopped and the second febrile attack came on. Then the relapse would be replaced or succeeded by the bowel complication, which would most persistently stick to the patient, who became reduced in strength from day to day, till at last he sank of exhaustion, a miserable, dried-up, and most emaciated object. When the bowel complaint assumed the form of diarrhœa, the stools were generally copious, watery, dark or greenish in color, and offensive to the smell. If dysentery was the form of complication, a considerable amount of blood was at first passed; but the quantity generally decreased, and there were small but frequent mucoid discharges, only slightly tinged with blood.

Diarrhœa and Dysentery.

Character of stools in diarrhœa and dysentery.

35. Ophthalmia was not a frequent complication or sequela in the Central Jail; but in the Lahore Female Penitentiary, where the same form of fever broke out in the month of March, there were very few of the women attacked with fever, who towards its termination, or during the period of convalescence, did not suffer from ophthalmia. That it was dependent on the fever was evident from the fact that those who had not the fever, experienced also an immunity from the ophthalmia.

Ophthalmia.

36. Glandular inflammation and suppuration occurred in a good many instances. The parotid and submaxillary glands sometimes swelled enormously; pus formed and kept discharging for a considerable period. Pharyngeal abscesses also were noted in a few cases.

Glandular inflammation and suppuration.

37. Only two cases have come under my observation in which the fever was followed by partial paralysis: in one there is paralysis of the *postio dura* on one side; the other is the case of a boy who made a most tedious recovery, and in whom the right leg has suffered partial wasting, with diminished power of sensation and motion.

Partial paralysis.

38. The very tedious convalescence and persistence of severe arthritic pains, unaccompanied by effusion into the joints, were well marked features of the disease. A good many patients remained in hospital for months after the fever left, suffering from nothing but these pains and general debility.

Tedious convalescence. Severe arthritic pains.

39. During the colder months lesion of the lungs and their coverings were almost constantly met with. The pleuritic adhesions were sometimes slight and easily broken up, being evidently of very recent formation, but in not a few instances they were strong and tough, and the pleuræ could be separated only on the application of a considerable amount of force. In only one instance did I find a collection of fluid in the pleural cavity.

Anatomical lesions. Of pleuræ.

The substance of the lungs presented every appearance from simple hypostatic congestion up to the stage of grey hepatization. In a few cases small tubercular deposits or abscesses were found. As the weather became warmer, the lesion of the lungs became less marked and common.

Of the lung substance.

40. Enlargement of the liver was a most common appearance up to the very end of the epidemic. The change of weather from a colder to a milder temperature did not seem to influence the state of this

Of liver.

organ as it did the lungs. There seemed generally to be simply intense engorgement without structural degeneration. In a few cases there was great friability, the finger entering its substance on pressure as it would a piece of dough.

Simple enlargement of the spleen was also very commonly found on dissection ; but it was less frequent, and had generally proceeded proportionately to a less extent than had the enlargement of the liver.

Of spleen.

Ulceration of large intestines.

41. Ulceration of the large intestines was very often met with. Numerous little ulcers with distinct outlines were observed in the position of the solitary glands.

The history of such cases shewed that during life dysentery had occurred as a complication, or sequela of the fever. A certain amount of thickening and submucous deposit was also not unfrequently observed in the large intestines.

Ulceration not found in small intestines.

Peyers patches never shew evidences of ulceration.

In no instance was there found ulceration of the small intestines. Careful examination of Peyer's patches was made in numerous dissections, with the view of determining the point as to whether they presented evidences of ulceration ; but in every case examined, the result was the same, no ulceration existed. The mucous membrane of both the large and small intestines was not unfrequently found congested, as might have been anticipated from the pre-existent diarrhœa and dysentery.

42. The only other appearances noted were in numerous cases infiltration of the tissues with bilious matter. A small pale and flabby condition of the heart, frequent congestion of the kidneys, the existence in the lateral ventricles of the brain of an abnormal amount of serosity, and in one instance congestion of the veins of the pia mater. I regret that, till towards the termination of the epidemic, I had not the means of ascertaining the state of the contents of the cranium.

Other post mortem appearances.
Heart.
Kidneys.
Brain.

43. Some of the general measures carried out by Dr. Penny in the commencement of the epidemic were mentioned in para. 3. The additional ghee and vegetables to all prisoners were continued during the whole of the epidemic, with the exception of a few weeks, when the latter could not be supplied. The convalescents had each two chittaks of meat served out to them, made into soup, with salt and other condiments. As many spare blankets as possible were served out, first to the sick and convalescent, and after them to the healthy. The solitary cells were shut up. The healthy were not allowed to leave the barracks till the sun was well up, and labor was reduced to a minimum.

General measures adopted during the epidemic.

Meat served out to convalescents.

Additional blankets.

44. Still however, the sickness went on apace. Notwithstanding the palliative measures adopted, the numbers attacked increased, and the death-rate got higher every month. Early in December the proposal was made that a number of the prisoners be moved from the Central Jail. All agreed in the desirability of carrying out the proposal ; but how to effect it was the difficulty. The Golah Seraie, emptied of the prisoners since the completion of the 2nd circle on 2nd August 1863, was occupied by the approvers, and was, therefore, not available. Nor could any other suitable building be found. The only resource, therefore, that remained was to effect a movement into camp. Accordingly, on the 20th December 1863, 500 of the strongest and most healthy looking prisoners were removed

Thinning the Jail proposed.

Camp formed at Shajamal on 20th December.

to the Shajamal encamping ground. The experiment, however, did not succeed; for at the end of three weeks there were no less than 70 out of the 500 down with fever, and two had died. The cold, as will be seen from statement in Appendix K, was at the time very great; and, although an additional blanket was given to each prisoner, as well as straw supplied to lie upon, the want of success was attributed, and I have no doubt correctly, to the injurious effect of the cold. It will be seen that the mortality during December, when the men were first moved into camp, was higher than during any other month of the epidemic, being no less than eighty-four.

Sickness and mortality in camp.

45. On the prisoners being brought back to jail, a most important step was taken, viz. the removal of the thugs from the Golah Serai and the location there of upwards of 450 prisoners. The barracks and hospital were thus greatly thinned, and the prisoners were placed under more favorable circumstances than they had been since the commencement of the epidemic. The result is noteworthy. The change for the better was so marked, that Dr. Penny, in the extract already quoted, gives it as his opinion that the type of fever had changed once more to the intermittent form during the month of January 1864. The mortality, however, was very high, as will be seen from Appendix A or D.

Golah Serai occupied by prisoners.

46. Long-term prisoners were not received into the Central Jail from other districts from December 1863. Prisoners from the Lahore district were still admitted. It was, however, a fact that could not fail to attract observation, that many of those recently admitted into the jail were within a short period after their incarceration attacked with the fever. Sanction was, therefore, solicited in February, and at once obtained, to have the Lahore district prisoners after conviction sent to another jail. This was continued till the end of the epidemic.

No fresh prisoners received into the jail, from the month of February to the end of the epidemic.

47. A movement into camp was made a second time on the 6th March 1864. On that date 1196 prisoners were removed from the Central Jail and put under canvas at Shajamal. The sick and convalescent, who were now considerably reduced in numbers, and could be all contained within the Golah Serai, were left behind. It would have been very desirable to move them also into camp, but difficulties with regard to tentage and additional guards prevented this from being carried into effect.

Prisoners moved a second time into camp on 6th March.

The measure was adopted at the recommendation of the Deputy Inspector General of Hospitals and the Inspector General of Prisons; and I believe that one of the grounds that led to the recommendation being made, was the fact that the infectious or contagious character of the fever was more clearly recognised than it had been before.

The temperature was much more equable than it had been in the month of December; and any good that might be expected to result from the movement was less likely to be neutralized by the unfavorable circumstances that attended the first movement.

When moved into camp, the prisoners were not put upon hard work, nor were they allowed to remain idle. Their minds were kept occupied by the lighter sorts of employment, as twine, rope-making, durrees, ban, moonj, &c. The greatest attention was paid to the washing of the clothes, bedding, &c, and daily ablutions were strictly enforced.

48. It will be seen from appended statement A or D, that during the month of March a very great improvement took place. The deaths were only 32, while they were 67 in February. Although, however, this improvement followed the movement into camp, I do not look upon it as altogether due to it. I consider that the disease had previously reached its culminating point, and that,

Improvement in the month of March.

although apparently now advancing, now receding, it had on the whole shewn evidences of diminished virulence. Thus, though in the month of February there was a high death-rate, it will be observed from statement D that the number who succumbed to the disease within the first few days after the admission into hospital, was smaller than it had been for several months. Still I have no doubt there was good effected. The influence it had on the minds of the prisoners was very observable. They seemed to experience great relief in leaving behind them the place that had been the scene of so much suffering, and where so many of their fellow-convicts had been cut off. This was no small object gained; for there can be no doubt that after the disease had fully set in, a considerable panic was created in the minds of the majority of the convicts. There was no such thing as malingering. The difficulty was to induce the men to give intimation of their illness at a sufficiently early period after they were attacked.

What part of the improvement was due to the movement into camp.

49. The camp was not broken up till the 9th April, when the weather becoming too hot for tent life, the prisoners were taken back to the Central Jail. Previously, however, to this, the hospital and all the barracks within the jail had had the floors dug up and replaced by fresh earth from the outside. The walls, &c., were scraped and re-plastered, and all the barracks were fumigated with green wood, which was kept burning in them (the doors being shut) for a number of hours. Every place within the jail walls,—the privies, cook-houses, workshops, &c.,—underwent a most thorough purification. There was a most marked improvement in the sickness, during the month of April. What share any one of the measures adopted had in producing the result, may be matter of opinion.

Camp broken up on 9th April.

Barracks and Hospital cleaned and fumigated.

Most marked improvement in the month of April.

The rapid decrease, during the month of April, of deaths to eight, and of admissions to sixty-seven, was remarkable; and this fact must, I think, be allowed to prove that at least the prisoners were placed in very favorable circumstances for the disappearance of the disease.

50. In reviewing the general measures adopted, there is one point which deserves attention, viz., the want of a suitable building to which a number of the prisoners in the Lahore Central Jail can be expeditiously and on short notice removed on the outbreak of epidemic disease. Even were tents always at hand, or procurable in a few days, which they are not, the weather is not during the whole year suitable for tent life. In the months of November, December, January, and February, the cold at night in the Punjab is keenly felt even by the European, when clad in a style especially adapted for the season; and I think that every one who knows what the prisoner's dress is, must allow that the coat, two blankets, and tât bedding, even with the aid of a little straw to lie upon, are quite insufficient to protect him, if under canvas, against the cold that exists during the months noted above. If besides, epidemic disease be prevalent, there can be no doubt that the depressing influence exerted by the cold on the vital powers will render the prisoners more liable to be attacked, and increase the mortality. Dr. Penny regretted very much that there existed no such reserve building, by the occupation of which he might have at a more early period thinned the population of the jail, and in his sanatory report strongly recommends that for this purpose the Golah Serai should be always kept in repair and left unoccupied. I quite concur in the recommendation thus made by Dr. Penny; for I feel convinced that, at least so long as the barracks in our jails are crowded to the extent they are, the first thing to be done, the measure that must take the precedence of all others, if any good is to be effected, is on the

No suitable building to which the prisoners can on short notice be removed.

Dr Penny's recommendation that the Golah Serai should be left unoccupied and kept in repair for the reception of prisoners in the event of an epidemic breaking out.

appearance of an epidemic to thin the population of the jail, and allow each prisoner a larger amount of sleeping space.

Treatment of the disease.

51. So far as my experience of the late fever goes, no remedial measures cured or cut short the disease. I soon became convinced that so long as the febrile stage lasted, no benefit resulted from the exhibition of quinine, and I have previously recorded my opinion that it was apparently powerless in preventing the occurrence of relapses. Certainly during the period of convalescence, I very generally exhibited quinine as a tonic; but other tonics I looked upon as equally efficacious, e, g., the dilute mineral acids, and preparations of iron, more especially the common Tinct. *Ferri* Sesquichlorid.

Quinine of no avail during the febrile stage, or in preventing relapses.

52. The objects aimed at latterly were to assist nature in eliminating the poison from the system, to meet complications as they might arise, and to support the powers of the patient, so soon as it might be necessary by generous diet and stimulants.

Treatment adopted on admission.

53. The constipated state of the bowels on admission was generally relieved by the exhibition of two or three grains of Calomel or Pil. Hydrarg. as many of Extract Coloequth, Co. and a grain of Pulv. Ipecac, followed in three or four hours by a warm Rhubarb draught. In cases presenting an unusually jaundiced tinge, the constipated state of the bowels was generally more obstinate than when that symptom was absent; and in those cases the same dose had to be administered a second or third time before the bowels were freely opened.

Treatment during the febrile stage.

During the febrile stage, when there were great heat and dryness of skin, liq. Ammon. Acetatis with Potasse Nitras, was generally exhibited; but even profuse perspiration, when it occurred, was not necessarily followed by any amelioration of the severity of the symptoms. The free use of a drink of dilute acetic or sulphuric acid was very grateful, and considerable relief was expressed to follow sponging the surface of the body with tepid water and vinegar, In cases where the tongue was thickly white-or yellow-furred, a powder of two or three grains of Hydrarg. C. Creta, as many Pulv. Antimon. Co., with 6-8 Potasse Nitras was often given and thought to be beneficial in acting on the liver, &c.

Minimum amount of lowering treatment borne.

54. When local inflammation or congestion took place, the nature of the disease admitted only of the minimum amount of lowering treatment. In bronchitis and pneumonia, even local bleeding was scarcely ever resorted to, or if it was the quantity of blood abstracted was very small; counter-irritation, by means of sinapisms, blisters, &c., was freely applied in cases exhibiting both lung and liver complications, and, in the instance of enlargement of the latter organ attended by jaundice. The only medicine from which I think benefit was derived was a mixture of the dilute nitro muriatic acid with nitre. I have no doubt that those medicines acted beneficially after the bowels were opened by the doses already described, as generally administered on admission.

Treatment of diarrhœa and dysentery.

Diarrhœa and dysentery were often most obstinately persistent, and defied all treatment, the medicines that usually prove efficacious in those diseases being but too frequently powerless to do any thing else than produce a slight and temporary improvement.

The combination of gallic and dilute sulphuric acid and opium, I found perhaps more beneficial in the diarrhœa cases than any other medicines; and, under its use some very bad cases pulled through. In chronic dysentery cases, Ipecaucuanha in three or four grain

Treatment of dysentery when occuring as sequela.

doses, with and without opium, and Hydrarg. C. Creta was frequently tried and found to be perhaps more efficacious than any other treatment; but it, as well as every form of astringent remedy, whether given by the mouth, or in the form of enema, but too often proved of no avail. The treatment might with stimulants and generous diet, keep the patient alive till he was little else than a mere skeleton, but the proportion of cases that recovered from this form of sequela when fully developed was very small indeed.

55. The powers of the patient had often to be steadily supported almost from the first. Diffusible stimulants and spirits were freely administered; and, had it not been that they were freely supplied, and the extra diet dispensed with a liberal hand, the mortality, great as it has been, would I have no doubt have been very considerably increased. All the sick were fed regularly three or four times a day—sago, arrow-root, soojee, milk, dhaee, meat made into soup, forming the principal articles of the extra diet, such of them being given as were considered most suited to each particular case.

Date of accession of the epidemic.

56. In statement A, appended to this report, are supplied data from which I think any one will be able to arrive at a correct conclusion as to the date of the invasion and decline of the epidemic. I have there given from the beginning of 1863 to the end of May 1864 the numbers admitted into hospital under four headings, viz., fever, diarrhœa, dysentery, and other diseases; the total number treated; the total deaths; deaths to strength per cent. &c. &c., for every month. It will be seen from that statement that there was nothing remarkable with reference to the numbers of admissions and deaths during any months of 1863 till August, when there was a sudden increase of fever cases admitted, as well as of total number of deaths during the month. The admissions under fever being 156, total deaths 18, compared with 26 under the former heading and 5 under the latter in July. From the month of August onwards, there was a steady increase of the sickness and mortality up to December, when the number of admissions reached 540 and the deaths 84. The commencement of the sickness may, therefore, I think, be correctly dated from August 1863. Its culminating point was reached in December; and, I consider that it finally disappeared from the jail in April.

57. The course of the fever was more fitful during its decline than accession, and its final departure was characterised by considerable (apparent) abruptness. But I am of opinion that this is to be explained by a reference to the measures adopted, especially the one by which from February to the end of April no fresh prisoners were admitted into the jail. According to the computation, the fever raged over a period of nine months, during seven of which its ravages were most destructive. Dr. Penny dates its commencement, as has already been seen, from September. That it had not quite left the jail in April 1864, I am quite convinced; for though many of the cases admitted exhibited mild symptoms, in not a few the severe type of fever was unmistakeable.

Was the fever infectious or contagious?

58. The proofs of the contagious or infectious character of the disease, which I shall now detail, were to me quite convincing. The determination of such a point is never unattended by difficulty, and the difficulty was not diminished in my case by the circumstance that the fever when I took over charge had been raging for four or five months in the jail.

Proofs of contagion from jail establishment.

59. Out of the forty-one warders who superintend and guard the prisoners while laboring in the work-shops during the day time, and who have to perform all the duties connected with the management of the prisoners within the jail walls, not more than two or three escaped having fever; sixteen of them had it severely and two died. One of the fatal cases came under my own observation,

and exhibited the severe symptoms of which I have previously given an outline. The burkundazes who had charge of the prisoners at work in the garden, and on the erection of new buildings outside the jail, suffered, but to a much less degree.

Hospital establishment.

60. The hospital establishment, consisting of three native doctors, a compounder, and dresser, all suffered from the fever. The head native doctor "Shaik Chaidee," had a very severe attack.

With regard to the attendants on the sick, I was informed when I joined that every one of the prisoners then acting in that capacity had suffered from the fever. They might therefore be supposed to be well seasoned. I had, however, occasion to bring several prisoners into hospital as special attendants; and the fact that they were almost invariably attacked by the fever in an aggravated form, was one of the first circumstances that led me to believe that the disease was of a contagious character.

There was another circumstance that I observed relative to the admissions into hospital which tended to convince me of the communicability of the disease; it was this, that in several instances prisoners admitted into hospital labouring under some other disease were also attacked by the prevailing fever, and generally suffered severely. It was also noteworthy, as stated before, that a large number of the prisoners recently received into the jail suffered from the fever.

Other proofs of the communicability of the fever.

61. Other proofs of the infectious nature of the disease have either come under my own observation or been brought to my notice. The same sort of fever broke out in March and April in the Lahore Female Penitentiary and Lunatic asylum; and its communicability was in both places recognized by the Civil Surgeon, Dr. Smith. In both institutions did the native doctors suffer from a severe attack of the fever. The fever, as it occurred in the Lahore Female Penitentiary, came under my observation, and I shall refer to it more fully afterwards.

Lahore female penitentiary and Lunatic asylum.

In connection with a gang of transportation prisoners sent to Mooltan from the Lahore Central Jail.

62. A gang of transportation prisoners was forwarded from this jail to Mooltan in December. Soon after its arrival there, a fever, evidently of the same type as was raging in the Lahore Central Jail, broke out in the Mooltan jail, and its origin was attributed to infection caught from the Lahore prisoners.

Facts in connection with a gang of prisoners sent to the Googaira Jail that seem to negative the idea of contagion.

63. It is but right that I should state a fact that at least appears to tell the other way. In November a batch of 50 convalescent prisoners was sent from the Central Jail to Googaira. In the end of the month they were received into the Googaira jail, a great many of them at the time suffering from diarrhœa and dysentery, and a few from fever. The prisoners were well cleaned, and had fresh clothing supplied to them; but no extraordinary care was taken to keep them separate from the Goorgaira prisoners. No epidemic, however, broke out in the jail subsequently to their arrival. I ought to state that, even after the Lahore prisoners were received into the Googaira jail, the numbers were considerably under what it was calculated to contain in the barracks at the rate of 400 cubic feet to each prisoner. It is generally admitted that the diffusible power of the poison of continued fevers, is, under favorable circumstances, not great; and to this fact, taken in connection with the absence of crowding in the Googaira jail, may be ascribed the immunity from fever enjoyed by the prisoners of that district. I have no doubt in my own mind that the fever was communicable, and I look upon the fact stated above as proving that it had not great diffusible power.

Mortality during the epidemic.

64. The mortality (406) was tremendous, whether we look to the actual numbers or their proportion to the strength in jail. Except the years 1856 and 1857, when the deaths were 367 and 140 respectively to an average strength of 1818 and 1780, 1863 and 1864 will, I fear, turn out to be the most deadly years that the Lahore Central Jail has hitherto seen. But this much can be said with reference to the first mentioned biennial period of mortality, that a large number of the deaths was caused by cholera, the disease regarding whose origin and treatment less perhaps is known than of any other which is generally met with in India; while the sickness that has lately devastated the jail belongs to a class on whose origin, progress, and attendant mortality, hygienic and sanatory measures have confessedly a powerful influence. I have given, in the form of an appendix, certain statements with reference to the fatal cases, shewing the number of days after admission into hospital, the duration of imprisonment, the ages, &c., when death took place. Some of these statements would possess much greater interest, as well as importance, could the average number of prisoners under the same headings be ascertained for the period during which the epidemic lasted. No data, however, exist from which these results can be obtained. Appendix D, shewing the number of days after admission into hospital at the time death took place during the different months of the epidemic, does not possess this draw-back, and will be of interest when taken in connection with the paragraphs describing the symptoms of the fever, and the mode in which death occurred.

65. In Appendix E, the fatal cases are distributed under certain periods of imprisonment passed at the time death took place. It will be at once observed how large is the proportion of deaths that occurred within six (6) months of the prisoners' incarceration.

In order to afford some standard of comparison, I have shewn in next statement (Appendix F) what were the actual numbers in jail on the 20th June 1864, that had passed the same periods of imprisonment. The two periods that will attract most attention are those under six months, and above five years. In the first the deaths amount to 109, or 26·8 per cent. of the total deaths. By now referring to Table F, it will be seen that had they been in proportion to the number of prisoners, who, on the 20th June had not passed more than six months in jail, the number would have been only 15·5 in every hundred deaths. The period in question, therefore, had in every hundred deaths 11·3 more than its own proportion; on the other hand, among prisoners who had passed upwards of five years in jail, there were in every hundred deaths 13·3 less than would have been the case had the casualties under that heading been in proportion to the numbers in jail on the 20th June.

66. The numbers in jail on the 20th June 1864 have been taken as a standard of comparison for want of a better; but it will be at once understood that an accurate representation is not in this way obtained of what were the average numbers under the different headings during the epidemic. Even had no disturbing element been at work in the jail during the last few months, the standard would not have been absolutely correct; but the large number of recent deaths, and the fact that a number of prisoners were during February, March, and beginning of April, not received into the Lahore Central Jail as usual, but sent to other jails, render it (the standard) less trustworthy. With regard to the prisoners who have passed less than six months, it ought to be borne in mind that in all probability they are renewed perhaps upwards of twice or even thrice a year, and that, therefore, the daily average number does not represent the extent to which they may be expected to suffer. The actual number of persons exposed to the morbific influence must enter into the calculation if a correct result is to be arrived at. It seems to me that in estimating the effect that different periods of imprisonment have on the death rate of prisoners, this fact has sometimes not been taken into account. In the absence

of data, I would not speak with great confidence, but I am of opinion that the number of deaths, although proportionately high for prisoners who had not passed more than six months, is not so much so as it would at first sight appear.

Origin of the fever.

67. In discussing the origin of the fever, it will not be out of place for me to mention that when it first broke out there is the testimony of the most competent judges that the cleanliness and drainage of the jail were all that could be desired. The night soil and urine were as usual removed outside the jail every morning and evening, and buried in trenches six feet deep, and covered over with earth. There existed no unwholesome smell, foul drains, or stinking privies whereby the air could have been contaminated; and after the termination of the epidemic, a committee appointed to examine into the sanatory condition of the jail, especially with reference to the surface and sub-soil drainage, gave it as their opinion that neither to any defects on that head, nor to a want of cleanliness or other sanatory precaution could the late sickness be attributed. The idea of the generation of malaria within the jail walls was also rejected. The drinking water was frequently examined, and found good.

68. What then was the circumstance, or combination of circumstances, that originated the late epidemic? Dr. Penny, as has been seen, considered that the fever was from first to last malarious—the severity of the symptoms and great mortality being due to the intensity of the cold. While agreeing that in the month of August and September 1863, there was an outburst of apparently purely malarious fever in the jail, I have in previous paras. given an account of the grounds that led me to believe that at the time I assumed charge in January 1864, the fever was of a continued character. It does not seem to me to be necessary to enter into any lengthened statement as to the sources of the malaria which in the first place gave rise to the fever among the prisoners. It has already been shewn that the prisoners in the Lahore Central Jail were not singular in this respect; that in fact intermittent fever was prevalent to a very wide extent all over the country.

Sources of malaria near the Lahore Central Jail.

The unsatisfactory state of the adjacent country westward, in the direction of the Ferozepore road, and northward in the direction of the civil station, intersected by numerous ravines and water-cuts, and in many places at no great distance from the jail, presenting hollows in which water collects and stagnates, is no doubt calculated to intensify the malarious exhalations; and I am of opinion that the health not only of the jail, but also of the civil station, would be greatly benefitted by the destruction of these foci of disease.

69. I do not, however, look upon the malarious fever as the true epidemic, but rather as a powerful adjunct to other causes acting depressingly upon the general health of the prisoners, and predisposing them to disease. I consider that the other chief causes of lowered health, were the depressing effects of imprisonment, insufficient or inappropriate diet, insufficient clothing, and overcrowding.

Depressing effect of imprisonment.

70. It is well known that the simple fact that a man is incarcerated exercises an injurious effect upon his health in proportion to the extent of the change it produces in his former habits, and to the keenness with which he may feel the separation of home ties, or the degradation of the position that his fault or misfortune has placed him in. I refer to this universally recognised principle only in order that I may mention that there are numbers of the convicts in the Lahore Central Jail, who, having previously to their imprisonment lived a life of the most unbounded freedom, may be expected to display the evil effects of confinement in an eminent degree. In this class I would place the hill-man and cattle-lifting Jut, who together form a large proportion of the inmates of the jail.

71. There can be no doubt that 400 cubic feet, the regulation space allowed to each prisoner, during a large proportion of the 24 hours, are quite insufficient for respiratory purposes, and inconsistent with the maintenance of health. This would be the case, however the different dimensions were proportioned; but when it is taken into consideration that the superficial space allowed to each is only about 18 square feet, or 9 feet by 2, the insufficiency of the accommodation becomes more apparent.

Overcrowding.

The average height of the barracks is 22 feet; but were this to be ever so much increased, it would not compensate for the injurious effects induced by the close proximity of the prisoners to one another, lying as they do, closely packed side by side, each inhaling the air vitiated by his neighbours.

The ventilation through the grated doors and roof-openings is excellent, when the wooden doors are not shut over the gratings and when a breeze is blowing; but any one who has ever visited one of our large jail barracks, containing 120 to 150 prisoners, in a still night, when the atmosphere is undisturbed by a breath of wind, will not require any lengthened argument to convince him that the means of ventilation fails to remove the poisonous exhalations that emanate from the prisoners' bodies.

Ventilation.

72. The minimum amount of barrack space considered to be adequate to the maintenance of the health of an European in India is 1,200 cubic feet, with a superficial space of not less than 70 feet; and I have little doubt that the majority of medical officers in charge of European troops would look upon that as insufficient, and would fix the minimum considerably higher. But taking the former and lower figures, we find that the cubic space is three times greater than that allowed to each prisoner in our jail, while the superficial extent is nearly four times as great. It may be granted that the natives of this country are naturally more sluggish in their habits—that the processes of integration and disintegration that are continually at work in the body are less active than in Europeans—and that, therefore, a less amount of oxygen will suffice for the healthy performance of the functions of life; but that the difference in this respect is so great as to warrant so enormous a disproportion of breathing space, is what few, if any, will maintain.

Minimum amount of barrack space considered to be adequate to the maintenance of the health of Europeans in India.

73. It is well known that the native population generally pay little or no attention to the ventilation or other sanatory conditions of their houses, and it would no doubt be found that in many of their dwellings as small an amount of space is assigned to each of the inmates as is allowed to the prisoners in our jails; but it must be remembered that during a great portion of the year, the hut is used only as the receptacle of their goods and chattels, while the compound, verandah or house-top is the sleeping apartment. When the cold season sets in, the lowered temperature compels them to betake themselves to the house at night; and it is during that season of the year, I believe, that generally break out these fatal fevers, which have of late been attracting considerable attention, and which are being recognised as distinct from the endemic malarious fever of the country. I have little doubt that to the want of sanatory precautions displayed in their dwellings, especially with regard to ventilation and overcrowding, those cold weather fevers may be ascribed.

Overcrowding in our jails with reference to the space allowed to each of the inmates of native huts.

74. The Lahore Central Jail is calculated to contain in the barracks, at the rate of

480 cubic feet the amount of barrack space each prisoner had in the Lahore Central Jail at the outbreak of the epidemic.

400 cubic feet to each prisoner, 2,500 individuals. At the time the epidemic broke out, there were about 2,000 convicts in jail, so that each had on an average 480 cubic feet of sleeping room; but this additional space (80 cubic feet) I consider to be quite insufficient, and likely to affect favorably the health of the prisoners only to a very small extent.

Dietary in use at the outbreak of the epidemic.

75. It would be out of place for me to enter at great length into the question of the dietary hitherto in use, nor is it necessary for me to do so, inasmuch as it has been pronounced to be inconsistent with the maintenance of the prisoners' health, and the introduction of a new and more liberal one has been sanctioned.

During the late epidemic the inability of the prisoners to withstand the morbific influence, the rapid prostration, the tendency to congestion of the blood-glands, the intractable forms of diarrhœa and dysentery, were most marked, and I have no doubt that, to a blood dyscrasia, induced at least partly by insufficient and inappropriate diet, are those results and the very high death rate to be attributed. It is also matter of general observation, and recorded in almost every jail report of the Punjab that, whether in epidemic or non epidemic years, the great proportion of the sickness and mortality has been due to low chronic forms of disease, e. g., diarrhœa, dysentery, scrofula, a low type of pneumonia, &c., in the development of which overcrowding and improper or insufficient food are two of the most powerful agents. The arguments in favor of the necessity of introducing a more liberal dietary into our jails, deduced from such observations, and from the fact that the great bulk of the free population of the Punjab consume in some form or other animal food as an article of diet, have been put so clearly in the correspondence accompanying the new diet scale, that anything I could say on that head would be superfluous.

My opinion is that the increased quantity of food allowed, as well as the variety introduced into the dietary, will exercise a most beneficial effect on the health of the prisoners. I subjoin the old and new scales for labouring prisoners, from which the character of the changes introduced will be best seen:—

Old Scale.

Daily, ...	10 Chks. attah, 36 grs. chillies, 67½ grs salt.
Five times a week,..	2 Chks. Dhall.
Twice a week, ..	4 Chks. vegetable, ½ chk. ghee.

Each prisoner had, on an average daily, during the week 13 chks. uncooked food.

New Scale.

Daily, ...	10 Chks. attah, ¼ chk salt, ¼ chk. condiments.
Thrice a week, ..	4 Chks. meat (or 3 chks dhaie), 4 chks vegetables, ¼ chk. ghee.
Four times a week,	3 Chks. dhall.

Each prisoner has, on an average daily, during the week 15½ chks. uncooked food if he eats meat; about 15 chks. if he eats dhaie.

The new dietary was introduced into the Lahore Central Jail on 1st of this month; and, out of a present strength of 1,591, only 93 do not prefer meat—a strong proof, if any were wanted, of the fact that it is generally used as an article of diet by the inhabitants of the province, and of the soundness of the reasons alleged for its introduction into the prison dietary.

76. Even the actual quantity of food allowed in the old dietary is, so far as I can learn, considerably less than that consumed by any but the most wretched of our free population; and with regard to them, variety is within the reach of all, and there are few, indeed, however poor, who cannot now and then obtain occasional luxuries. But were this not the case, it is an acknowledged fact that the minimum amount of food that will suffice to maintain health in a state of freedom, will fail to do so under the depressing influence of prison life. That the prisoners felt the diet to be insufficient, I conclude not so much from their stating that they did so, as from the fact that they would attempt at any risk to obtain more;—bread if it could in any way be negociated for, attah if it could be purloined, and, as a last resource, some would persistently fill their bellies with clay.

Actual quantity of the old dietary.

77. Another influence acting injuriously on the health of the prisoners, I believe to have been cold, arising from insufficient bedding and clothing. The single fold of tât on which they lie, ought it seems to me, to be replaced at least during the rains and cold weather by some contrivance which will raise them a little above the mud floor of the barrack, and during the really cold weather, from the beginning of November to the end of February, the nights are often so intensely cold in the Punjab as to render the two woollen blankets and coat insufficient to keep them in warmth. The operation of this agent (cold), whatever part it may have played in the origination of the late epidemic, no doubt greatly increased the attendant mortality. It has been shewn in former paragraphs that the lung complication, the immediate cause of death in a large number of cases, was evidently in proportion to the intensity of the cold; and in non-epidemic years it has been found that the cold months are the most fatal to our prisoners.

Cold, an agent acting depressingly on the prisoners' health.

78. There is no evidence that the peculiar type of fever was introduced into the jail from the outside.

No evidence that the peculiar type of fever was introduced into the jail from the outside.

The facts already brought forward shewing that the fever was raging within the jail in the beginning of the cold season, while the free population were enjoying an immunity from any general sickness, would go to negative the idea of the prisoners having had the disease in the first place communicated to them by infection or contagion. Certainly, at a later period in the cold season, commencing with the end of December or beginning of January, fever in an epidemic form made its appearance in several districts, Goojranwalla, Hissar, Delhi, and in some parts of the Lahore district, and at least in several places it was recognized to be of a different type from the endemic malarious fever of the country.

79. The village of "Majung," in the civil station of Lahore, was visited in April and May by an epidemic of fever, and, from observations made in the village itself, I feel convinced that the disease was the same as that which was disappearing rapidly from the Lahore Central Jail. It spread over the whole village, but it was the sweeper portion of it that suffered most severely, and it should be noted regarding them, that defective sanatory and hygenic conditions were more fully displayed in their case than in that of the rest of the villagers. Crowded together in small ill-ventilated filthy huts, and earning a precarious livelihood, it was a natural result that they should be the first and chief sufferers. Regarding the fever as it appeared in other districts, my information is not sufficient to enable me to offer a decided opinion as to whether it was of the same type as that which came under my observation here; but I think the probability is that the epidemic was one and the same wherever it occurred.

The fever as it appeared in the village of "Majung."

80. Towards the latter part of February and beginning of March, it was observed that fever was on the increase in the Lahore Female Penitentiary. At first it was put down to intermittent and remittent fevers. No cause, however could be discovered why malaria should at that particular time exercise a more than usually powerful effect. By and bye the severity of the symptoms attracted attention, and their similarity to those exhibited in the Lahore Central Jail was most marked. To describe the symptoms, complications, &c., of the disease, as mainfested there, would be merely to repeat what has been already said. The duration of the first attack of fever for a period of about six or seven days, the apparent convalescence for as many, the almost invariable occurrence of relapses, the severe arthritic pains, the attendant or subsequent diarrhœa or dysentery, and the very tedious convalescence, were well marked features of the disease. Lung complication going on to a fatal termination was unknown. By far the greater proportion of the deaths was due to bowel complications. Ophthalmia was a sequela, which very few who had the fever escoped.

The fever in the Lahore Female Penitentiary.

The female jail was emptied of its occupants on the 20th March, the healthy prisoners being sent to Shadra, the sick and convalescent to the leper asylum. The rations were increased, a small allowance of animal food being given daily. A few fresh cases were admitted after these changes were effected; but an evident improvement took place, as will be seen from Appendix II. The sickness and mortality in the female penitentiary were proportionably much less than in the Central Jail, the result being due no doubt to a variety of causes—the milder temperature, the less crowded state of the barracks, and, perhaps, to the early measures adopted.

81. I have in former paragraphs described various influences which I consider acted depressingly upon the prisoners' health previously to the outbreak of the epidemic, and which, if their existence be admitted, have confessedly a most powerful effect in giving a wide-spread character, and high death-rate, to any epidemic that may invade a body of men so circumstanced,

82. It is, however, now all but an admitted principle, that continued fevers of an infectious character may be spontaneously developed under the operation of certain sanitary and hygienic defects; typhoid or enteric fever being capable of being originated by the poison of filthy drains, sewers, &c.;—typhus, by the exhalations emanating from squalid human beings crowded together;—while relapsing fever is more specially due to want or destitution, which is generally also found in conjunction with overcrowding.

Certain continued fevers of an infectious character may be spontaneously developed.

83. Although I would not express a confident opinion on the mode of origin of the immediate or exciting cause of the fever that has just left the Central Jail, the idea is forcibly impressed on my mind that it is to be explained on the above principle: that in fact the under feeding and over-crowding generated the peculiar poison, whatever it may be, of relapsing fever, to which the prisoners were rendered more than usually susceptible by the lowered state of health induced by the malarious fever so rife among them after the rains.

84. Even granting that the causes of lowered health were not sufficiently powerful to originate the epidemic in the manner indicated in last paragraph, and that the disease having been generated through some atmospheric or other unknown influence, they acted only secondarily in intensifying its virulence and greatly increasing the mortality, there would still, I consider, be an imperative call to use every means for effecting their removal. But it appears to me that the true light in which such recurring outbreaks of disease ought to be viewed is this, that the prisoners are so clothed, housed, and fed, as to be for ever trembling in the balance between health and disease, and that, although for several years a

jail may, under favorable circumstances, enjoy an immunity from disease, some slight disturbing cause is sufficient to call into play the conditions under which infectious and virulent disease may be lighted up.

85. I had proceeded thus far, and had recommended that in order to meet the evils in question, the clothing and bedding of our prisoners should be increased during the really cold months of the year, from the 1st November to the end of February, and that each prisoner should have a minimum amount of barrack space of 650 to 700 cubic feet. But from the Punjab Jail Report for 1863, just received, I find that the clothing and bedding for prisoners in certain parts of the Punjab have been recognised as insufficient, and that the Central Jail Committee have given it as their opinion that 648 cubic feet is the minimum amount of space that ought to be allowed to each prisoner, with a superficies of 54 feet. To a decision arrived at by so experienced authorities, it would be presumption on my part to add a word. I feel convinced, especially with regard to the barrack accommodation, that temporary and palliative measures are quite inadequate, and that nothing short of the radical change proposed is likely to be effectual.

86. At present, small mud walls, three feet high, set with iron gratings, divide each barrack into four compartments. It would, in my opinion, be a great improvement to raise the walls to the roof, so as to make each compartment quite distinct from the rest.

87. In fine, under the improved dietary already introduced, and in the event of the changes proposed with reference to clothing and barrack accommodation being carried into effect, three of the most fertile sources of disease will be cut off; and the results of experience are at fault, if, all others sanitary precautions being duly attended to, the general health of our prisoners is not greatly improved—and if, when epidemic disease does break out in any of our jails, it is not in a great measure divested of the virulent and deadly character it has in many instances of late put on.

88. Both the jail and hospital establishments ought to be favourably mentioned for the manner in which they discharged their duties during the late epidemic. The Dárogah Brijnauth carried out with promptitude the many new arrangements that from time to time were considered necessary.

The hospital establishment, and especially the three native doctors, Sheikh Chaidie, Aluf-oo-deen, and Gunesha Lall, deserve the highest commendation. They bore the whole brunt of the storm without any external aid. Day and night, amid the most distressing scenes, they laboured incessantly and willingly, and their conduct elicited the highest praise from Dr. Penny. I would beg to recommend that their services meet with the favorable consideration of Government.

R. Gray, M. B.,
Superintendent Lahore Central Jail.

Lahore, Central Jail,
14th July 1864.

APPENDIX A.

Shewing the state of the Hospital with reference to admissions, deaths &c., from 1st January 1863 to 31st May 1864.

Month.	Daily average strength in jail.	Admitted into Hospital.				Total number of admissions.	Total number of treated.	Daily average number of sick.	Total number of deaths.
		Fever.	Diarrhœa.	Dysentery.	Other diseases.				
January 1863, ...	2172·09	29	8	5	48	90	173	77·32	7
February ,, ...	2130·96	27	6	6	38	77	141	63·68	4
March ,, ...	2093·03	29	7	8	37	81	123	54·90	2
April ,, ...	2091·10	45	2	3	29	79	139	61·26	8
May ,, ...	2054·35	66	3	2	13	84	137	56·41	10
June ,, ...	1998·63	18	3	4	19	44	84	43·73	7
July ,, ...	2050·64	26	5	3	31	65	84	35·67	5
August, ,, ...	2018·83	156	17	14	22	209	249	76·69	18
September ,, ...	2006·16	198	3	8	22	231	321	94·60	34
October ,, ...	1948·09	159	7	2	27	195	293	121·12	42
November ,, ...	2012·70	395	5	3	12	415	527	186·70	63
December ,, ...	1816·12	540	9	8	41	598	786	261·74	84
January 1864, ...	1697·22	449	9	12	27	497	716	348·38	58
February ,, ...	1598·41	233	11	4	26	274	590	248·34	67
March ,, ...	1490·51	78	3	..	9	90	256	92·58	32
April ,, ...	1441·63	40	10	4	13	67	124	47·86	8
May ,, ...	1444·63	33	3	2	24	62	88	29·96	4

R. Gray,

Lahore Central Jail, 14th July 1864.

Superintendent Lahore Central Jail.

APPENDIX B.

Analysis shewing numbers treated, and deaths from 1st August 1863 to 30th April 1864.

Remaining on 31st July 1863.	Admitted from 1st August 1863 to 30th April 1864.	Total.	Discharged from 1st August 1863 to 30th April 1864	Died.	Remained on 30th April 1864.	Total.	.
40	2576	2616	2155	406	55	2616	Daily average strength .. .. .. 1781·07 Ditto sick .. .. .. 164·22

APPENDIX C.

Analysis shewing the per-centage of sick to strength, &c., from 1st August 1863 to 30th April 1864.

Average strength.	Total number treated.	Total deaths.	Deaths to strength per cent.	Deaths to treated per cent.	Treated to strength per cent.
1781·07	2616	406	22·9	15·52	146·8

Lahore Central Jail, 14th July 1864.

R. Gray,
Supt. Lahore Central Jail.

APPENDIX D.

Analysis of fatal cases shewing the period at which death took place after admission into hospital.

	August.	September,	October.	November.	December.	January 1864.	February.	March.	April.	Total.
Under 1 day, ..	..	..	5	4	5	1	..	..	..	15
Above 1 and under 2 days, ..	..	4	2	6	6	1	1	2	..	22
Above 2 and under 3 days, ..	2	3	1	4	1	2	..	..	1	14
Above 3 and under 4 days, ..	2	5	3	5	5	3	4	1	..	28
Above 4 and under 5 days, ..	2	2	3	4	6	2	5	..	..	24
Above 5 and under 6 days, ..	..	3	1	3	7	4	3	4	..	25
Above 6 and under 7 days, ..	1	1	1	6	6	3	2	1	..	21
Above 7 and under 8 days, ..	..	1	..	5	4	4	6	..	..	20
Above 8 and under 9 days, ..	..	1	5	4	5	4	..	..	..	19
Above 9 and under 10 days, ..	..	..	1	4	2	2	3	1	..	13
Above 10 and under 15 days, ..	5	3	3	1	8	6	4	3	2	35
Above 15 and under 20 days, ..	3	4	4	3	6	8	13	3	2	45
Above 20 and under 30 days, ..	3	4	1	3	7	10	13	7	..	48
Above 30 and under 40 days, ..	..	2	6	4	8	6	5	1	2	34
Under 100 days, ..	..	1	5	6	7	1	8	8	1	37
Above 100 days, ..	..	1	1	1	1	1	..	1	..	6
Total, ..	18	34	42	63	84	58	67	32	8	406

R. GRAY,

Lahore Central Jail, 14*th July* 1864.

Supdt. Lahore Central Jail.

APPENDIX E.

Analysis of fatal cases, shewing the periods of imprisonment passed at the time death took place.

Periods of Imprisonment passed in Jail.	Deaths in August 1863.	Deaths in Sept. 1863.	Deaths in October 1863.	Deaths in Novr. 1863.	Deaths in Deer. 1863.	Deaths in January 1864.	Deaths in February 1864.	Deaths in March 1864.	Deaths in April 1864.	Total.	Deaths in every 100 under the different periods.
Under six months, ...	2	5	8	22	25	12	22	9	4	109	26·8
Above 6 months and under 1 year,	7	2	5	6	11	8	4	5	..	48	11·8
Above 1 year and under 1½ years,	1	7	5	8	15	12	3	3	1	55	13·5
Above 1½ and under 2 years, ..	4	3	4	5	8	6	6	1	..	37	9·1
Above 2 years and under 3 years,	1	8	6	8	12	7	13	4	..	59	14·5
Above 3 years and under 4 years,	2	3	7	9	9	4	7	4	1	46	11·3
Above 4 years and under 5 years,	1	3	1	3	3	3	9	1	..	24	6·0
Above 5 years, ...	..	3	6	2	1	6	3	5	2	28	7·0
Total, ...	18	34	42	63	84	58	67	32	8	406	

APPENDIX F.

Statement shewing the number of prisoners in Jail on the 20th June 1864, and their distribution under the same periods of Imprisonment as are noted in Appendix E.

	Total No. in Jail on the 20th June 1864.	Number under 6 months passed in Jail.	Above 6 mths. and under 1 year.	Above 1 year and under 1½ years.	Above 1½ years and under 2 years.	Above 2 years and under 3 years.	Above 3 years and under 4 years.	Above 4 years and under 5 years.	Above 5 years.
	1516	236	201	135	122	203	172	110	337
In every 100 prisoners in Jail on 20th June 1864,		15·5	13·2	8·8	8·0	13·4	11·3	7·3	22·3

Lahore Central Jail, 14th July 1864.

R. GRAY,
Superintendent Lahore Central Jail.

APPENDIX G.

Analysis of fatal cases, showing the age at which death took place during the epidemic.

Age.	August 1863.	September 1863.	October 1863.	November 1863.	December 1863.	January 1864.	February 1864.	March 1864.	April 1864.	Total.
Under 20 years, ...	..	...	..	..	1	..	1	..	..	2
Above 20 years and under 30 years, ...	2	5	10	12	18	13	15	12	2	89
Above 30 and under 40 years, ...	3	11	11	23	17	21	22	11	6	125
Above 40 and under 50 years, ...	4	7	4	11	18	12	10	3	..	69
Above 50 and under 60 years, ...	3	7	6	6	9	4	11	5	..	51
Under 70 years, ...	3	1	9	5	7	3	3	1	..	32
Under 80 years, ...	2	2	1	4	5	..	..	..	..	14
Above 80 years, ...	1	1	1	2	9	5	5	..	..	24
Total, ..	18	34	42	63	84	58	67	32	8	406

R. Gray,

Superintendent Lahore Central Jail.

Lahore Central Jail, 14*th July* 1864.

APPENDIX H.

Statement showing the number of admissions, deaths, &c., in the Lahore Female Penitentiary during the months of February, March, April, and May 1864.

	Remaining on 31st Jany. 1864.	Admitted.					Total number treated in hospital from 1st Feby. to 30th June 1864.	Discharged.	Died.	Remaining on 30th June 1864.	Remarks.
		During February.	March.	April.	May.	Total admissions.					
Average strength. 164.	14	58	48	14	19	139	153	105	10	38	The greatest number of deaths took place in March.

R. Gray,

Superintendent Lahore Female Penitentiary.

Lahore Central Jail, 14*th July* 1864.

APPENDIX K.

Abstract of Meteorological observations taken from 1st *July* 1863 *to* 30*th April* 1864.

Months.	Mean Barometric pressure during the month.	*Thermometer in sun.*	*Thermometer in shade.*				Rain-fall during the month, in inches.	Mean amount of cloud.	Prevalent winds.
		Maximum during the month.	Maximum during the month.	Minimum during the month.	Mean during the month.	Daily average range during the month.			
July 1863, ..	28·914	138·0	99·8	71·9	85·8	15·1	19·29	6·2	East and north-east.
August „ ..	28·966	138·3	102 0	68·23	87·4	17·2	2·07	4·3	Variable, but generally east or north-east.
September „ ..	29·075	138·3	105·0	69·21	90·0	24·3	2 or 3 very slight showers.	1·2	Very variable.
October „ ..	29·297	126·0	101·0	56·0	77·0	30·0	Do.	1·0	Do. north and north-west.
November „ ..	29·384	110·0	86·0	42·0	65·7	28·0	A few drops.	·7	Do. do.
December „ ..	29·441	100·0	77·6	39·0	57·7	26·2	·31	5·1	North and north-west.
January 1864, ..	29·432	96·0	70·2	35·0	54·3	25·9	2 slight showers.	3·2	Do. but variable.
February „ ..	29·311	107·0	84·0	37·0	59·5	26·9	·62	3·6	Do. do.
March „ ..	29·267	117·0	95·0	42·0	68·7	28·0	·30	4·1	Variable.
April „ ..	29·165	128·0	108·0	56·0	75·9	30·8	1·3	5·0	Very variable.

The above observations were taken by Dr. Neil at the Fort Lahore, and were kindly supplied to me, as the set of Meteorological instruments in the Lahore Central Jail is very incomplete, and consequently the observations meagre.

It should be noted that, from actual comparison, the temperature during the cold weather was found to be considerably lower here than in the Lahore Fort; on some occasions when the comparison was made the difference in the minimum temperatures during the twenty-four hours was as much as four or five degrees.

R. Gray,

Lahore Central Jail, 18*th July* 1864.

Supdt. Lahore Central Jail.

From the Civil Surgeon Mooltan, to the Inspector General of Prisons, Punjab.

I have the honor to submit the following report, on a fever of very fatal type which appeared in the Mooltan Jail towards the close of December 1863, the most characteristic features of which were early and extreme debility and a tendency to relapse.

Previous sanitary history of jail.

2. The general health of the convicts in 1863, was tolerably satisfactory. The average number of daily sickness 1·24 per cent of strength, and the casualties up to the date of the appearance of the epidemic were 2·2 per cent of strength.

For a time during the hot weather there was a well marked tendency to scurvy, which was soon checked by an extra ration of fresh vegetables. The season was a very unhealthy one all over the district. Intermittent fever was unusually prevalent. In seasons when the rains are heavy, or the river and canals rise high, causing extensive inundations, it has been observed that fever always becomes very prevalent in this district. The rains last year were unprecedentedly heavy, the fall being nearly 14 inches, the average fall being about 6 inches. Immense tracts of land were inundated. During the months of August and September nearly 30 per cent of the native troops in the military cantonment were constantly laid up with intermittent fever. In those months there were very few cases in the jail, only a little above one per cent of strength. On the 25th December a party of convicts arrived from Lahore. They were in a very wretched state: on the last march into Mooltan they had been caught in the rain, which fell very heavily the greater part of the day. From 10 to 15 of them were in a very precarious state on their arrival. Two died within a few hours. Five were dead before the end of the month, and six more, eleven altogether, were dead before the end of January. They suffered from a low fever, the symptoms of which will be described hereafter. A fever of the same character spread gradually but steadily through the jail; from this date till in the beginning of March it attained its greatest development. There were no fresh cases after the 1st May, and those which had been admitted before that date became rapidly convalescent, with the exception of a few in whom the fever had resulted in chronic diarrhœa.

Thus the duration of the epidemic may be considered to extend from the 25th December 1863 to the 30th April 1864.

The following tabular statement shows concisely the progress and results of the epidemic.

Date.	Strength.	Admissions.	Ratio of admissions to strength per cent.	Deaths.	Ratio of deaths to admissions per cent.
25th to 31st December 1863,	719	17	2·3	7	41
January 1864, ...	755	89	11 7	11	12·3
February, ...	727	217	29·8	11	5
March, ...	487	177	36·3	27	15·2
April, ...	474	64	13·5	11	17·1
Total, ...		564	...	67	...

Thus, out of a mean strength of 632 convicts there were 564 admissions and 67 deaths.

The ratio of deaths to admissions per cent was 11·8. The ratio per cent of admissions to strength was 89.

This statement however does not show fully the destructive effect of the epidemic; for on the 3rd March the fever was spreading so rapidly, and had assumed so virulent a character, that at my recommendation 231 convicts were released,—of whom 62 were at the time patients in hospital. Supposing that the latter would have been subject to the same ratio of mortality as affected the other patients, the total number of deaths would have been 74, the ratio per cent of deaths to admissions would have been 13, and the ratio of deaths to strength 11·7. Convicts who had been more than six months in confinement suffered most from the epidemic. The following tabular statement shows the deaths, distributed in two classes, those of convicts who had been less, and of those who had been more, than six months in confinement.

Length of confinement.	Mean strength.	Number of deaths.	Ratio per cent of deaths to strength.
Under 6 months, ...	360	28	7·7
Over 6 months, ...	272	39	14·3

Thus it appears that the death rate of convicts who had been in imprisonment more than 6 six months was nearly double that of those who had been less than six months.

Symptoms.

The attack was not ushered in by any marked symptoms. The patient complained of weakness, loss of appetite, slight headache, pains in the limbs, chilliness. There was usually a circular livid spot on the cheek, which was a sure indication of the disease. In 24 hours from the time of first feeling unwell, the patient was completely prostrated, he was barely able to move, his tongue was brown and dry, very red at the edges ; occasionally the whole tongue was red, dry and glazed, sordes formed on the teeth.

The conjunctiva in almost all cases was of a yellowish tinge. In many there was general jaundice—a complication which was very fatal. Delirium was not a common symptom, except when jaundice existed. There was intense torpor of the mental functions. The patient seemed to have great difficulty in understanding anything that was said to him. When asked to put out his tongue, he seemed to make a strong effort of the will before doing so; he opened his mouth slowly and with deliberation, and protruded the tongue slowly and tremulously. He lay quite indifferent to all that was going on around him. He expressed no wants ; made no complaints. So profound was the torpor, that I believe the patients would have remained for days without asking for food or drink ; so that constant care was required to see that they got nourishment. In some few cases the craving for drink was very urgent. Patients had a typhus smell; but in no case did I discover petechiæ or maculæ. In a large proportion of cases, there was considerable fulness and tenderness on pressure in the epigastric region.

Vomiting was not a common symptom; though in a few cases it was present and proved very obstinate.

Hiccup was very common. In several cases it caused great distress, continuing with hardly any intermission for five or six days. It usually appeared early in the disease, and was not then indicative of danger. Epistaxis was very common in the latter end of March and beginning of April. It was often checked with much difficulty, and was a very unfavorable symptom. In a few cases, the disease ran a very rapid course. Coma supervened, and the patient died in from six to twelve hours from the time of seizure.

As a rule, however, the history was one of progressive debility for a period varying from five to eight days. The tongue became intensely dry and hard. The teeth covered with black sordes, the body greatly emaciated, the pulse feeble to mere threadiness. The patient's condition began to improve without any marked symptoms indicating the change. The pulse became slower and acquired more body. This was the *first* sign of improvement. Soon afterwards the tongue moistened and cleaned, and the patient looked bright and asked for food. He said that he was "khair," very well, only that he was weak. In a day or two his appetite became very keen, and he entreated for a liberal allowance of food.

He continued steadily to improve for a period ranging from five to twelve days, when he was again seized with the same symptoms as at first, but in a milder form. This attack was more commonly attended with dangerous local complications, of which diarrhœa was the most formidable.

The second attack passed off, like the first, without any marked crisis, and was sometimes followed by a third or fourth, or even a fifth.

Of the cases attended with diarrhœa, an immense proportion proved fatal. After the 12th day, diarrhœa was the immediate cause of death. No medicine seemed to exercise any influence upon it. The dejecta presented a great variety. In some, large quantities of mucus; in others, small feculent stools, largely mixed with blood and mucus; in others, the excreta consisting of apparently healthy fœcal matter, was immense as compared with the quantity of food taken by mouth; in others there was white chalky diarrhœa.

The diarrhœa cases were marked by the most distressing emaciation. It was painful to look at the wretched objects.

They had the ghastly look of skeletons enclosed in skin, which had become dry and hard and leathery, and covered with a white scurf which no amount of washing with soap and water could remove. Rubbing the skin with warm oil seemed to afford great relief in this condition. These cases retained consciousness almost to the last; many of them ate heartily within half an hour of their death.

In the cold weather of January and February, some cases were complicated with pneumonia; but, as a rule, pectoral complications were rare. Œdema of the lower extremities was a very common sequela of the fever. I have never found it in connection with albumenuria.

Anatomical character.

The most constant morbid appearance was noticed in the spleen. This organ was found greatly enlarged in almost all cases examined. In one case it weighed three pounds. It was found in a variety of conditions. In some, very hard and nodulated; in others, a black pulpy mass, so soft that it almost fell to pieces as it rested on the hand; in others, the capsule was mottled with yellow spots. In one case, which was attended with epistaxis, the spleen was found shrunk to half its normal size.

The liver was in almost all cases more or less diseased. The morbid changes in some few instances amounted to slight congestion only; but generally the organ presented a deep black color, and felt very soft and friable. The gall bladder was usually full of healthy looking bile. In the cases in which diarrhœa had been a prominent symptom, there was usually found diffused redness of a brownish shade in the mucus membranes of the large intestine, which felt thickened and hard.

The tumefaction of this membrane was in several instances so considerable as to reduce the calibre of the bowel to a very small size. Circular spots of black pigment were often noticed on which the mucus membrane seemed depressed below the general surface, and felt particularly hard. The mucus membrane of those spots seemed firmly glued to the muscular

coat. Ulcers, some large and some very small, were found extending through the mucus membrane to the muscular coat, which were as clean cut as if made with a gouge. But ulceration was not a frequent condition. In one case I noticed the lower two-thirds of the duodenum intensely vascular.

The small intestine was found healthy.

The mesenteric glands were in several instances found much enlarged.

Peyer's patches presented no morbid change.

The following tabular statement shews the duration of the fatal cases :—

Duration of Cases.	No. of Cases.	Remarks.
Under 12 hours, ...	4	2 Lahore Convicts.
Ditto 1 day, ...	5	
,, 2 days, ...	7	
,, 3 days, ...	5	
,, 4 days, ...	2	
,, 5 days, ...	10	
,, 6 days, ...	2	
,, 7 days, ...	2	
,, 8 days, ...	2	
,, 9 days, ...	4	
,, 10 days, ...	2	
,, 11 days, ...	3	
,, 12 days, ...	1	
,, 13 days, ...	2	
,, 14 days, ...	1	
,, 15 days, ...	2	
,, 16 days, ...	1	
,, 17 days, ...	2	
Longer periods, ...	10	
Total, ...	67	

Thus it will be seen that nearly 50 per cent. of the fatal cases terminated on or before the fifth day.

Cause of the epidemic.

The exciting cause of the epidemic was, in my opinion, infection introduced by the arrival of the convicts from Lahore on the 25th December. It is difficult to explain how the disease originated among this party; but I have no doubt that it was imported by them into the Mooltan jail. The grounds of this opinion are as follows :—

On the 24th December, there was hardly any sickness in the jail. Out of a strength of 685 convicts, there were 11 cases in hospital, of which 3 are recorded under the head of dysentery, 3 fevers intermittent, and 5 were local ailments. On the 12th January there were 42 cases, nearly all fevers; 31st January, 47; 15th February, 62; 29th February, 106; 3rd March 147. These figures shew a steady progress made by the epidemic from the date of the arrival of the Lahore convicts. But was the fever from which the Lahore convicts suffered of an infectious nature? The facts bearing on this point are the following :—Three of the patients who were in hospital on the day of the arrival of the Lahore convicts, suffering from complaints which were not considered serious, died of fever; and a man who was admitted two days after their arrival for an ulcer on the foot, also died of fever. One of the native doctors had a very severe attack. The dresser's life was for some days in much danger. Of the convict attendants on the sick, one after another was struck down. The sweepers seemed especially liable to the disease. On the 19th March, there were so many of this class laid up

that I was informed that no others could be obtained in the jail. In the month of April, two of the Police guard on the hospital at Wuzeerabad died of fever. The jail durwan also died—an old, respectable man, in whom the disease proved fatal in three days.

In the month of February, I had an attack of a mild character myself, which clung to me for several days. It was attended with great headache, aching pains in the limbs, intolerance of light, and prostration of strength. At the time I attributed this illness to exposure in the sun; but, from later experience, I have no doubt it was due to infection caught in the jail.

All these facts taken in connexion with the circumstance of there being no fever epidemic in the station at the time, seem to me to put the question of the infectious nature of the jail beyond doubt, and to trace the origin of it to the arrival of the Lahore party.

In Ireland typhus fever is in a very large proportion of cases traced to a severe wetting. This cause has been shown to be quite adequate to produce the disease in persons who were in no way exposed to infection. I cannot but think that the present case proves the adequacy of the same cause to produce a highly infectious fever, closely allied to typhus, in this country, in persons of indifferent health, placed in depressing circumstances. It is worthy of notice, that no case of fever occurred among the female convicts, whose average strength was 27. They had not been brought in contact with the Lahore party or any other infected convicts.

No case among the female convicts.

There was a concurrence of conditions towards the close of 1863, which greatly favored the action of infection, and must be regarded as predisposing causes of the epidemic which ensued.

Predisposing causes.

1st. The general health of the people of the district was much below par.

The last two years have been seasons of very heavy rain, and extensive inundation, and intermittent fevers were in consequence very prevalent, with the effect of greatly impairing the public health.

2nd. Towards the end of the year there was a great and sudden increase in the number of convicts. In the months of October, November and December, there were 365 new admissions into the jail; such a sudden accession of numbers would have been under any circumstances attended with some danger to health, especially when so many of the new admissions were already affected with disease. It was particularly unfortunate too that the increase of numbers occurred in the cold weather.

The people of this district hardly ever bathe in the cold months, so that at that time they are most offensively dirty in their persons.

The rapid and close aggregation of so many persons, in such a condition, still suffering from the mental depression arising from recent imprisonment and the fresh severance of home ties, would indeed in itself, perhaps, be sufficient to generate an epidemic, but at all events no circumstances can be conceived more favorable for the growth of infection already existing.

On the 31st December, the average superficial area in barracks allowed for each convict was 27 feet. The cubical space was 440 feet. There was a space of nine inches between the convicts as they lay on the ground.

3rd. The development which the epidemic suddenly assumed in February is, I think, referable to the very usual cold which prevailed in that month. On the 16th February the thermometer fell to 25°F. and on the 29th February it marked 33°.

The first two days in March were also very cold. Such a low temperature continued for many hours of the night was very trying to convicts whose constitutions had been impair-

ed by sickness or imprisonment, and who were but poorly provided with warm clothing. No result was more likely to follow than congestion of the liver, as actually occurred.

All through the cold weather the convicts complained bitterly of cold. I believe the clothing was not so good this year as it usually is, but however that may be, I never went round the wards in December, January, and February without dozens of convicts begging for an extra blanket. There can be no doubt that the unusual coldness of the season and the insufficient clothing of the convicts were very energetic predisposing causes of the epidemic.

The following tabular statement shows the temperature of the first three months of this year, as compared with the same months of the two preceding years:—

STATEMENT.

Years.	January.								February.								March.							
	Maximum.	Minimum.	Mean maximum.	Mean minimum.	Mean daily range.	Range of month.	Temperature at 9 o'clock A. M. mean.	Mean temperature of the month.	Maximum.	Minimum.	Mean maximum.	Mean minimum.	Mean daily range.	Range of month.	Temperature at 9 o'clock A. M. mean.	Mean temperature of the month.	Maximum.	Minimum.	Mean maximum.	Mean minimum.	Mean daily range.	Range of month.	Temperature at 9 o'clock A. M. mean.	Mean temperature of the month.
1862,	71	21	64	34	30	46	50·6	51	89	30	80	44	36	59	62	64	97	33	83	49	34	64	67	68
1863,	75	23	67	34	33	51	56·8	53	89	33	75	42	33	45	65	61	100	38	87	51	36	62	76	72
1864,	74	29	68	37	31	45	50·	54	82	25	72	41	31	57	56	56	99	35	86	49	36	64	71	70

It is right here to state that the conservancy arrangements of the jail have been very carefully attended to. Excreta are removed daily from the jail enclosure, so that there is never any large collection of filth. There has been perfect freedom from offensive smells in every part of the premises. At night only the air the convicts breathe was tainted with the smell of excreta. There are no latrines or urinals attached to the barracks, so that the calls of nature are attended to within the barracks.

The smell arising from the urine and other excreta of so many convicts collected together in one building, has unavoidably till lately been a source of horrid contamination of the air. The adoption of the earth system of sewage has almost completely removed the abomination. The barracks are well ventilated by large windows on each side, at intervals of six feet, there is also a broad aperture along the ridge of the roof.

The food supplied was of a very superior quality; and, judging from the good condition which the convicts exhibited at the worst period of the epidemic, I have no reason to suppose that it was insufficient in quantity.

Early in April, I discovered that the water in two of the wells was very foul.

The water in several of the cantonment wells was found very foul about the same time, so much so that I felt it my duty to bring the subject to the notice of the military authorities, with a view to having the water for the use of the troops filtered.

In a few days the wells cleaned of themselves, and have not since been foul. I have not been able to form any decided opinion as to the cause of the temporary fouling of the wells; nor have I been able to connect the epidemic in any way with the condition of the water. The jail water is usually very good.

In the early period of the epidemic, quinine alone, or in combination with small doses of sulphate of magnesia, was much used; but it was soon found to exercise no influence on the

fever. It did not do any harm, but it was quite inefficacious for good. Diaphoretic medicines, and chiefly the acetate of ammonia, were largely used, but I cannot say with much advantage. In the jaundice cases, I thought that occasional doses of calomel and Dover's powder were useful; but, indeed, the only medicinal remedy which was of any very decided advantage, was the application of blisters to the epigastrum in cases of hepatic tenderness. These were of signal and almost immediate benefit in such cases. It was soon found that the fever was subject to a law of periodicity which no medicinal remedies were capable of disturbing. Asthenia was the most common form of death. My efforts were chiefly directed to maintaining the patient's strength by the exhibition of food and stimulants till the cycle of the fever, which ranged from five to eight days, was completed, after which he progressed to convalescence without much further care.

General sanatory measures adopted.

A pure state of the air surrounding the patients was so essential to their recovery, that every effort was made to secure it, and with great difficulty, it was obtained in a great degree. By constant changes of the clothing of the sick, and boiling them, by employing a large staff of sweepers, and insisting upon the immediate removal of excreta, and with the aid of charcoal laid in pans at intervals at ten feet all over the building, the air of the hospital was kept tolerably pure.

The building itself admitted of excellent ventilation.

As soon as the infectious nature of the fever was made clear, the sick were removed altogether from the jail to Wuzeerabad, formerly the residence of the Dewan Moolraj.

On the 26th March, the main body of the convicts were withdrawn from the jail to Bakurabad, a healthy spot, about six miles distant.

Advantage was taken of their absence from the jail, to have the floors of the barracks dug up, and fresh earthed, the walls fresh plastered, and the wells cleaned, and the buildings fumigated with sulphur.

Preventive suggestions.

I venture to recommend that the superficial area allowed for each convict be much increased. So long as the present scale exists, epidemics will be of frequent occurrence, in spite of every preventive precaution.

2. As the experience of several years shews that the cold weather is the sickliest season at Mooltan, I think it would be advisable to increase the quantum of ghee from the 1st October to 1st April.

3. Convicts over forty-five years of age, and those who have been nine months in imprisonment, should be allowed dahee.

4. The cold weather clothing should be increased, and the hot weather clothing diminished.

5. Better arrangements for preserving personal cleanliness among the convicts in the cold weather should be adopted.

A. DeRenzy,

Mooltan, 1st June 1864. *Civil Surgeon, Mooltan.*

Report on the Fever prevalent amongst the Prisoners in the Goojranwalla Jail in March and April 1864.

There were a few cases of dysentery amongst the old men in January. Three of these terminated fatally. After a few days illness, these cases of dysentery were followed by several cases of fever of an intermittent type, which soon assumed typhoid symptoms. The old and feeble men were chiefly attacked. It spread slowly amongst the other prisoners, although every precaution was taken to prevent communication between the sick and healthy. It varied considerably in its continuance—sometimes there being no admissions for two or three days; at other times several admissions occurring daily for some days. The fever was generally complicated with a low kind of pneumonia, and frequently with dysentery. On the 2nd February, it was deemed advisable to move the sick from the jail, and they were accordingly sent to the Government Dispensary, that being the only available building; and, as the nights were very cold, it was impossible to place them in tents. At the same time a more liberal diet was given to all the prisoners, ghee and chunna were allowed, and all hard labour was stopped. Notwithstanding these measures, the fever continued its course. The general health of the prisoners became affected, they were consequently moved out to Emnabad; 105 were marched out on the 3rd March and 60 on the 5th March. Here the fever varied in its severity,—some days as many as 7 or 8 cases being admitted, and other days none. As the prisoners did not improve much at this place, they were moved to Futtee Mundee and Loniawalla, and placed in huts. This was on the 24th March. It will be seen from the return marked "A" that the number of admissions now slowly but steadily diminished. The type of the disease became changed. At its first appearance, the exacerbations had been nightly, and pulmonic complications constant; now the exacerbations were not so frequent, were less severe, and the chest complications became less persistent. The general health of the men improved; and when I left Goojranwala, on the 28th April, only 76 men remained out in camp; the others having returned to their hard labour, and the total number in hospital on that date was nineteen.

The post mortem appearances shewed a tendency to general disorganization of the blood, serum being invariably effused in large quantities, and of a pale thin character, generally in the pericardium, but also frequently in the ventricles of the brain. This effusion of serum was more marked in the earlier cases, but still persisted, though in a less degree, in the later cases; but in these serum was not so pale and thin. The lungs were generally congested and hepatized towards the posterior portion near the base, and more or less disorganized, readily breaking on pressure. The liver and spleen were frequently enlarged. One case calls for particular mention,—a case of rapture of the spleen. Case appended.

Treatment.—The sick have throughout been separated from the healthy men, and the clothes of the whole of the prisoners, as well as the prisoners themselves, were frequently and thoroughly washed. Fires were burnt in the tents, huts, and other places occupied by both sick and healthy, for the purpose of disinfecting. Charcoal and lime were also liberally used, and the dry system of conservancy was strictly carried out in the camps. Cots were provided for the sick. Quinine and sulphuric acid were given to all the prisoners as tonics and prophilactics. Anti-periodic, tonic and occasional alterative medicines were given to the sick. Pulmonic and dysenteric complications were treated on general principles. Mutton broth and milk were liberally administered; and these, with bark and ammonia were especially beneficial.

Cause. The tendency to low asthenic pneumonia, to dysenteric complications, the

typhoid type of the fever, the nightly exacerbations, and the fact of most of the cases proving fatal during the night (and indeed most of the earlier fatal cases occurred during the night), would induce me to attribute the disease to the action of cold on weak and enfeebled constitutions. The post mortem appearances clearly point to poverty of the blood as the chief cause of this epidemic. In every fatal case serum was effused; in the earlier cases in great quantity, and thin pale and watery; as the general health of the prisoners improved, the serum effused was less in quantity, and was not so thin and watery. It is true that up to January the prisoners looked stout and well; but as soon as fever occurred in the jail, the manner in which it ran its course proves that their bodies were not in a healthy tone. The chowkedars and burkindazes would also have suffered, and they were remarkably exempt. The jail had been kept clean and regularly leeped, and I could find no source for malaria in its vicinity. Most of the prisoners of this district are cultivators. They live out in their fields, eat large quantities of food, and, I believe, drink a good quantity of milk. They also eat a considerable amount of ghee during the cold weather. Now, in jail they never see animal food in any form. This fact alone is sufficient to shew that their bodies must deteriorate; for vegetable food alone cannot keep up the wear and tear of the human frame while undergoing the depressing influences of imprisonment and hard labour. I would urge the necessity of animal food being added to their present diet, more particularly during the rains and cold weather. Another point which I think calls for notice, is the deficiency of clothing for the lower extremities during the cold months; and, I think, the issue of warm, loose pyjamas would prevent many cases of dysentery and pulmonic affections in weak men.

C. E. Wikeley,
Assistant Surgeon.

Case of Rupture of the Spleen in the Goojranwala Jail Hospital.

The man was admitted to hospital with fever on the 24th February. On the 27th he complained of great abdominal pain, and intolerance of pressure. The abdomen was swollen, his face was anxious, and his skin cold. He died during the night.

The post mortem examination shewed the spleen was ruptured in three places. Two fissures being on the upper edge, and one on the lower; these ruptures were across the margin of the spleen. The blood-vessels passing to the spleen were large, and full of dark thick blood. The spleen itself weighed about three pounds. The peritoneal covering tore away from it, and the structure of the organ was soft and spongy, and broke on the slightest pressure.

I made careful enquiries—

1st, of the prisoners in the barrack from which the man was admitted;

2nd, of the men with whom he had been working;

3rd, of the men in hospital, especially those near his bed;

4th, of the hospital servants and burkindazes;

all these declared that they had never seen the man receive a fall, blow, or any other injury.

I believe the rupture occurred from an increase of congestion of the already disorganized spleen, during an exacerbation of fever.

RETURN A.

Sick Report of the Goojranwalla Jail Hospital, from the 28th February to 30th April 1864.

Date.	No. of sick in hospital.	No. admitted to hospital.	No. discharged hospital.	Deaths.		Date.	No. of sick in hospital.	No. admitted to hospital.	No. discharged hospital.	Deaths.
Feb. 28*th*	50	3	2	2		April 1*st*	61	3	10	1
,, 29*th*	49	5	6	2		,, 2*nd*	53	1	5	..
March 1*st*	46	1	5	..		,, 3*rd*	49	3	8	1
,, 2*nd*	42	2	2	..		,, 4*th*	43	3	..	..
,, 3*rd*	42	..	..	..		,, 5*th*	46	8	..	1
,, 4*th*	42	7	8	1		,, 6*th*	53	1	4	1
,, 5*th*	40	3	7	..		,, 7*th*	49	2	4	..
,, 6*th*	36	2	1	..		,, 8*th*	47	1	3	..
,, 7*th*	37	15	..	..		,, 9*th*	45	7	2	..
,, 8*th*	52	..	..	..		,, 10*th*	50	2	..	..
,, 9*th*	52	3	6	1		,, 11*th*	52	3	6	..
,, 10*th*	48	..	2	2		,, 12*th*	49	..	5	..
,, 11*th*	44	..	3	2		,, 13*th*	44	..	7	..
,, 12*th*	39	1	7	..		,, 14*th*	37	2	..	1
,, 13*th*	33	5	3	1		,, 15*th*	38	3	1	..
,, 14*th*	34	3	4	..		,, 16*th*	40	2	2	..
,, 15*th*	33	12	8	..		,, 17*th*	40	..	..	1
,, 16*th*	37	4	5	..		,, 18*th*	39	6	5	..
,, 17*th*	36	..	1	1		,, 19*th*	40	1	4	..
,, 18*th*	34	9	2	..		,, 20*th*	37	1	3	..
,, 19*th*	41	6	7	1		,, 21*st*	35	1	5	..
,, 20*th*	39	3	4	..		,, 22*nd*	31	2	3	..
,, 21*st*	38	3	1	..		,, 23*rd*	30	1	3	..
,, 22*nd*	40	10	6	2		,, 24*th*	28	1	3	1
,, 23*rd*	42	3	2	1		,, 25*th*	25	2	6	..
,, 24*th*	43	8	..	..		,, 26*th*	21	2	2	..
,, 25*th*	50	7	4	..		,, 27*th*	21	..	2	..
,, 26*th*	53	9	..	..		,, 28*th*	19	..	..	..
,, 27*th*	62	12	1	4		,, 29*th*	19	..	2	..
,, 28*th*	69	5	2	1		,, 30*th*	17	..	1	..
,, 29*th*	71	2	2	..						
,, 30*th*	71	2	7	2	Total from 28th February			205	208	30
,, 31*st*	64	2	5	..	to 30th April 1864, ..					

C. E. Wikeley,

Assistant Surgeon.

Memo: on the epidemic in the Punjab Jails, by Dr. Macintire, Deputy Inspector General of Hospitals, Peshawur Circle.

My opinion has been asked of the nature and cause of the disease which has lately been committing great ravages in some of the Punjab jails; and the report of a committee convened at the Central Jail, at Lahore, to investigate the subject, as affecting that particular jail, has been furnished me.

This disease appears to the authorities and medical officers to be something new, and opinions are much divided as to the name to be given to it, each person or party being guided by some particular symptom or train of symptoms which happen to attract particular attention.

Leaving the name to be settled by those who take a greater interest in *that* part of the subject than myself, I declare, from nearly ten years experience, that the frightful amount of sickness and mortality which is *now* attracting so much attention and causing so much uneasiness, has from time to time been common in the Punjab jails ever since they were built, and is nothing more than the ordinary disease of the country acting on masses of men in such a peculiar state as tends to modify these diseases in a peculiarly fatal manner. I had occasion to bring this prominently to the notice of the medical and judicial authorities so far back as 1855, and I most confidently refer to my several reports,—general and special—of that and subsequent years on sickness and diet in the Mooltan Jail and country, and among the troops European and native, for full confirmation of this statement. On comparing these reports of mine with those of other medical officers in other parts of the Punjab, particularly with those relating especially to the late sickness and mortality in jails, there may be some few apparent differences arising from local circumstances and peculiarities, and also the peculiar importance attached by different medical officers to particular symptoms, but I maintain, and many others agree with me, that one leading feature pervades the whole, and, to use a geological expression, crops out through various other formations.

The first of these diseases to which I shall allude is Scurvy, which I am fully prepared to show by palpable *facts* pervades the Punjab in some shape or other, more especially where we have masses of people collected in one place, such as in jails, forts, cities, regiments &c., I maintained this for a long time in the face of much opposition, and some ridicule perhaps, from medical men whose opinions I had, and still have, very great respect for; but I am now so fortified by long experience, and the support of many of those very medical men and many more besides, nearly all of whom were at first sceptical of, or at all events taken more or less by surprise by the reality of the facts which I pointed out to them in my own, *and their own* practice, that I can have no hesitation in laying down as an axiom for guidance in our treatment of the ordinary diseases of the country, the opinion expressed in the beginning of this paragraph. To enter into detail of the whole of the facts upon which this opinion is founded would lead to such a prolongation of this memorandum as would trench too much on the time of His Honor the Lieutenant Governor of the Punjab, as well as my own; it would extend to other parts of the country and to the army, and to what I saw among troops at sea; some proof however of the existence of this disease in the Punjab jails, may reasonably be expected from me, and I now proceed to adduce it.

In doing this I shall endeavour, 1st, to satisfy the scruples of sceptics by here confining myself chiefly to the one particular symptom, in the absence of which many people even now will not acknowledge the disease at all: I mean the "spongy gums"; not the red, tender looking gums and foul teeth, which although occasionally scorbutic, are more frequently produced by other causes; nor yet the black discoloration of the gums which is so often observed in perfectly healthy natives; but the regular scorbutic gum, ranging from a thin

blueish, red line along the margin, to the fully developed, swollen, bleeding, sloughing, toothless mass, almost protruding beyond the lips. During the eight years I had charge of the Mooltan jail, gangs of convicts from every jail in the Punjab came under my observation annually: they came to it from Dera Ishmael Khan, Dera Ghazee Khan, Leia, Moozuffurgurh, Googaira, and Jhung, to undergo their sentences, particularly when those jails were crowded; and those for transportation beyond seas were collected there *from all the jails in the Punjab.* I made it my particular care to observe minutely the condition of these people, and I cannot call to mind a single gang which was entirely free from the scorbutic taint, as evidenced by the state of the gums, while in several, the disease was most fully developed in almost every form. The result of my investigations was such as to preclude the supposition that it was originally induced by the miseries of a long journey in boats or carts, dreadful as they undoubtedly were, and ever must be I fear, and greatly as in many cases they must have aggravated it. No, the taint was clearly traceable to the jails whence they came, and in the Mooltan jail at the same time were convicts with it who never made any journey at all. I have since seen it in almost all its forms in the Rawul Pindee, Peshawur, Kohat and Bunnoo jails. As regards the Lahore Central Jail in particular, I say the taint *must* be prevalent in it, in some shape or other, and to a greater degree perhaps than in most other jails, because it necessarily receives large numbers of convicts from all the others, and because in my opinion notwithstanding the perfection of the general arrangements, and the presence of a resident medical officer of undoubted skill to superintend them, the mortality has hitherto been greater than can otherwise be accounted for, even by the different circumstances as regards duration of imprisonment &c., existing in it. I have personal knowledge of the fact, that *many* scorbutic prisoners were sent to it from the Mooltan jail, where again, they were collected from others as above shewn; and doubtless the same thing was and is still done elsewhere. It does not follow that because a man looks tolerably well, he is free from this taint; and this accounts for the medical certificates given with each gang when starting on a journey, that they are in a fit state for removal; it also accounts for the taint being so frequently overlooked at ordinary medical inspections.

These then are some of the, to me, convincing proofs of the persisting presence of scurvy, or a scorbutic diathesis or taint in the Punjab jails; and it now remains to show how and why it becomes so much worse in them than in other places, and complicates and renders fatal other diseases which are tractable enough outside them. But before proceeding further, it may be as well, as this memo is intended for non-medical readers, to remove at once the common idea that the use of salt meat and want of vegetables are the main causes of scurvy, by pointing out the fact that true scurvy is very common in parts of India where the people never eat salt meat, and live almost entirely on vegetable substances.

There are certain conditions in which if men are placed for any length of time, scurvy will be pretty sure to shew itself. These are close confinement to one limited place, and at the same time living in crowded, badly ventilated quarters, and restricted to *sameness* of food and general mode of living. These I think are the most prominent conditions, which were, and are still, occasionally found to lead to such awful visitations on board ship, and in beleagured garrisons, until counteracted by the measures originated by Cooke, and improved upon by other voyagers. That these conditions exist in our jails no one I think will deny. A very prominent premonitory and concomitant sign of scurvy noticed by all observers is great depression of spirits. It is needless to say that this also exists in its utmost intensity in our jails; particularly those occupied by convicts from our western frontier and mountain districts, as well as the pastoral and wild desert tracts of the Doabs and Derahjhat. Is it to be wondered then that we find our convicts, many of whom are affected with or predisposed to scurvy before entering our jails, suffer very severely afterwards from the causes already

enumerated? But when to these causes are added, particularly in men like the above, accustomed all their previous lives to the rather abundant use of animal food of some kind, either milk, butter or flesh, a purely vegetable diet, in quantity barely sufficient to keep in check the actual cravings of hunger in a Hindoo from the banks of the Ganges, and clothing, which, although I dare say it is sufficient for the "cool" season of Lower Bengal, is totally inadequate to the requirements of the rigorous winter of the Punjab, when the thermometer on the ground falls to 16°, and within four feet of the ground is commonly seen at from 22° to 27°, a careful and unprejudiced enquirer must be astonished to find that such catastrophies as we occasionally see in our jails are not of more frequent occurrence. I maintain, without fear of contradiction from people who have taken the trouble to look well into the matter, that, as a general rule, the prisoners in the Punjab jails are kept in a state of modified famine—from hunger all the year round, and cold from October to April or May; and that these two avoidable circumstances, added to the unavoidable consequences of incarceration, are quite sufficient to account for the undue prevalence of the scorbutic taint, which, I hope, I have now proved to exist among them.

The extent to which the very clear indications of this taint in the gums may exist in a jail or elsewhere, varies at different times; and it has more than once appeared to me as if their development presaged a season of more than usual sickness. I am very certain that in seasons of epidemic in the Mooltan and Rawulpindee jails, it was general among the sick, and very palpable in a large proportion of the prisoners not actually in hospital, as, for instance, 69 per cent. at Rawulpindee.

But I have for many years maintained that scurvy shews itself in other parts of the body than the gums, even when not complicated with other diseases to be noted presently; such, for instance, as a tendency to apparently unprovoked bleeding from the nose, and discoloration of the skin in small spots or large patches; obscure "pains" in different parts of the body, totally different from rheumatism, and particularly affecting the bones and muscles of the legs, frequently most severely near the joints, and sometimes leading to the idea of sciatica; hardness of the muscles of the legs, with and without swelling; œdematious swelling of the limbs and face; or general dropsical tendency, without any apparent organic disease or previous illness; burning of the feet, particularly the soles; general langour and depression of the whole system. From the apparently lazy, obstinate malingerer, whose only answer, if he is a Punjabee, to enquiries about his ailments, or remonstrance against punishment for not working, is "Bemár,"* "Bearám,"* or, pointing to the stomach and abdomen, he complains of obscure burning pains or aching there, which he designates "Vao;"* to the poor emaciated wretch, who languishes for weeks without any complaint, except perhaps a painful whine or deep sigh when spoken to. With reference to these symptoms I consider our modern term "anœmia" a great misfortune in a jail, as it blinds the medical officer to the real state of the prisoners, as I have shewn in my report on the Rawulpindee jail, and have seen elsewhere. If these ailments and some others which might be enumerated are not clearly scorbutic, I can certainly testify that they are generally amenable to anti-scorbutic treatment.

The next disease to which I shall refer is fever. The prevalence of this class of disease in a jail will, I think, generally speaking be found to depend upon that outside; although a very remarkable difference in proportion of "sick to strength" will sometimes be observed, and can I think be easily accounted for, but the type of the disease undergoes a remarkable change in the jail. The ordinary intermittent loses much of its distinctive character, the

* The best translation of "Bemár" and "Bearám," as here applied, is our expression "out of sorts," or our slang phrase, "very seedy." "Vao" is literally "wind." The natives of Hindostan include the whole in the term "Bádee," which is the name I have heard applied by native hakeems in the Punjab and other parts of India to every form of scurvy.

different stages of cold, hot, and sweating are not so thoroughly defined; and it does not yield so readily to treatment as a medical officer finds the disease to do elsewhere. Instead of leaving the patient rather weak after a paroxysm, as we see every day out of jail, the convict succumbs to it, and very often dies from what we call "exhaustion" or "want of constitutional stamina or pluck". The medical officer saw him a short time before in apparently good health, and thinks but little of the case on first admission to hospital, or until he sees him suddenly collapse and die in probably the cold stage of a paroxysm, or linger on for days or weeks in a "low," "debilitated," "anœmie," "apathetic," "feverish" state, with occasional *relapses*, and generally speaking with some "pulmonary," "hepatic," "splenetic," "cardiac," "enteric," "dysenteric," or dropsical complications, which are often discovered only after death. Remittent fever, again, prevails outside the jails, and gives the medical officer but very little trouble. In the jail, at the same time, he finds *a* remittent fever; he calls it a "low," "asthenic," "typhoid," sort of fever; but it has not the true distinguishing symptoms of English typhoid, or typhus, which he saw as a student, and now again reads of in books. It goes off for a time, perhaps, but somehow the patient does not recover; and, after going through much the same process as the preceding, he dies, and one or more of the most important organs of his body is destroyed in a very peculiar way. I, and others, have seen these fevers become so pestilent and infectious that the native doctors, dressers, and prisoners attending on the sick, have all been prostrated with it; and several of the latter died. The rapidity with which putrefaction sets in on these occasions, is sometimes terrible; it appears even before death, particularly where wounds or ulcers have existed. The complications of these fevers are—1st. Spleen disease. It is needless to say that in epidemics of intermittent fever the spleen is frequently enlarged and otherwise diseased; but when this organ is destroyed in the form I am alluding to, it is in rather a peculiar manner. But, considering the extreme frequency of this complication of fever, particularly intermittent, outside the jail, I have been struck by the comparative freedom from it of prisoners, and I cannot help coupling this circumstance with the occasional remarkable comparative immunity from true intermittent already referred to. I am not disposed to be very positive on this point; but I consider it one well worthy of investigation. 2nd. Pulmonary disease. This is very common in the Punjab, particularly in winter. It ranges from a common "cold" to pleurisy or pneumonia, and is met with very commonly as a complication of fever—a very common form is influenza, which often prevails as an epidemic much as it does in England; but not, perhaps, with such prostrating effects in the generality of people. It causes a good deal of suffering, and some mortality at times, and requires tolerably active treatment. The same disease will attack the jail at the same time, but it rapidly assumes the "low" "asthenic" type described in the preceding paragraph on fever, and terminates very much in the same way; unless, indeed, it may have been accelerated by the "active treatment" which is found to answer in most of the cases outside. The lungs in these cases are found destroyed in a peculiar manner, quite different from that by acute disease, and in a peculiarly rapid manner when there has been any previous disease of the organ. It is no uncommon thing to see a man die in the course of a night, who at the evening visit did not attract particular attention or complain of anything. This is the "galloping consumption," "pulmonary apoplexy," "gangrene of the lungs," "latent pneumonia," of the monthly (medical) returns of sick. 3rd. Dysentery, again, is common enough in and outside of jails; but in jails, as we see every day, more especially in seasons of epidemic fever, it assumes the "low" type, and becomes purely hemorrhagic—large quantities of dark, watery blood, passing away without much suffering, and the lining membrane of the bowels found disorganised and destroyed in a peculiar way, totally different from what we see in ordinary acute or chronic dysentery; diarrhœa the same. 4th. Hepatitis is much more common among the people of the

Punjab than is generally supposed. It very frequently accompanies fever, and will also be found by itself, or idiopathic. It attacks prisoners in a jail; but, instead of the sharp, well-marked symptoms of acute hepatitis, or the slowly-developed symptoms of hepatic abscess, we find very rapid and peculiar destruction of the organ, without any great pain or suffering, and frequently with only a species of jaundice to guide us in our diagnosis. 5th. The last common disease I shall adduce is ophthalmia, which outside a jail is almost too well known to need description; when it prevails in a jail, we often find the eyes totally destroyed in a single night, with hardly any previous warning, except that the patients were in a "low," "anemic," "debilitated" state.

Here, then, we have all the important organs of the human body destroyed in a peculiar manner. Let us see how. 1st. The spleen when affected is dark, swollen, soft, and friable. I have known death ensue suddenly from its bursting spontaneously, and giving vent to an enormous quantity of blood into the peritonium. 2nd. The lungs are found pulpy, and so easily broken up as to yield to the necessary pressure of the fingers in handling them. They are dark, full of dark blood, and sometimes extensively suppurated, more especially in parts which had previously suffered from inflammation or tubercles. Those affected by these diseases seldom escape the disease I am treating of when it attacks a jail; and, being one of the most common diseases in the Punjab, it is, of course, frequently met with. 3rd. The lining membrane of the bowels is softened and swollen, dark-colored, and full of dark blood, which oozes from its surface. The swelling (or thickening, as some people might call it) is sometimes very extraordinary; and I have found the large intestines quite full of effused blood, without the trace of an ulcer or visible abrasion of surface. Parts which had suffered from previous inflammation or ulceration from dysentery (which I need hardly say is a very common disease in this country), are found abraded, ulcerated, and destroyed. In many cases, however, of death from hemorrhagic dysentery or diarrhœa, the only sources of the enormous discharges of blood seen before death are a few dark bluish patches on the surface, may be of the small intestines only, from which the blood oozed slowly, collected in the bowels, and came away with as little pain or uneasiness to the patient as an ordinary evacuation. 4th. The liver is enlarged, soft, dark-colored, full of dark blood, breaks up on slight pressure, and is sometimes suppurated, particularly in parts which had previously suffered from inflammation. 5th. The destruction of the eyes is extraordinary when it occurs. If ordinary ophthalmia is present, it speedily runs into ulceration of the cornea, frequently ending in loss of sight; but I have seen the entire eye become suddenly filled with blood, swollen and pulpy, with, of course, loss of vision. Most of these cases died at furthest in a few days. Those that escaped had little more than empty eye sockets, as the eyes literally burst, and ran out of them in the shape of gumeous, bloody purulent matter. The latter affection is not so common in the Punjab as in other places; but, as it does occur, I think it right to mention it.

As a common accompaniment to nearly all the classes of cases here described, I found large quantities of serum, often dark-colored, effused in the cavities of the chest (pleura and pericardium), without any well-marked signs of active inflammation either before or after death; the heart sometimes as it were floating in thin fluid, and so soft and flabby as to be almost capable of being folded up; its cavities, and that of the arterial trunks leading from it containing masses of fibrin of various sizes, some of them almost filling the cavities, and resembling polypi; in two or three of which I even detected signs of incipient organization in the shape of a few minute capillary blood vessels on their surface. Serum is also found effused in the brain without apparent inflammation, and it is sometimes dark-colored.

These are what I found in the bodies of about 100 prisoners, which I had the lamentable opportunity of dissecting in the Mooltan jail, during the prevalence of a disease, which

I feel sure will be found similar in all important respects to that which has of late been committing such ravages in that and other jails. I have often described them to medical officers of jails and other large establishments ; and, although I cannot say that any one individual observed them *all* in his own practice, yet, taking their observations collectively, everything I have now described has been seen in the Punjab jails. I know that in some of these jails, post mortem examinations are not generally very carefully made by the medical officer, who has frequently too much work, as a military medical officer, to do more than prescribe for the sick in a jail during a sickly season, and examine bodies sent from the district by the civil officers in cases of murder, &c., &c. I appeal, however, to the experience of all medical officers who have devoted attention to the subject, and to the medical returns of the jails since 1848.

In describing the post mortem appearances of the important organs found destroyed, I have said it is *peculiar*. The parts are all soft, pulpy, full of blood, easily broke up by handling, dark-colored, and sometimes suppurated, or ulcerated. Now, is not this exactly what we find in a greater or less degree in the true scorbutic gum ? When this form of disease is found to prevail in a jail, careful examination of the prisoners will shew that the scorbutic gum is common among them, especially in hospital ; at least such was the case at Mooltan, in my own practice, although just now, after several years, I cannot give the exact number so affected. Such was the case last spring at Rawul Pindee, when I found every prisoner in hospital had it in a well-marked degree, and 69 per cent. of all others in the jail had it also ; and such I believe to have been the case at different times in several other jails, from what I have heard from medical men, and even from convicts who had been in them, and suffered.

I, therefore, have no doubt that the disease is scorbutic ; and, if any doubt existed on my mind, it would be removed by the fact that *general* anti-scorbutic treatment, both prophylactic and curative, is the only thing that enabled me to cope with it. I confidently challenge *practical* investigation into this point. But of the nature of this treatment, more presently, when I dispose of what appear to be the causes of this disease. To describe these would be to describe those of the ordinary diseases of the country, because I maintain that the commencement of these great attacks of sickness in our jails coincides with the prevalence of sickness outside the jails. Such I know was the case at Mooltan in 1855-56—such I know was the case lately at Lahore, Goojranwalla, and Rawul Pindee—and such I believe will be found to have been the case again at Mooltan in 1863-64. The primary disease is intermittent fever, which begins outside, say in July or August, but does not attract any particular attention in the jail ; not because it is not present, but because the cases are less numerous in proportion than outside, and not quite so distinctly marked. "A scurvy-hunter" (as I am sometimes facetiously designated) like myself, however, will about this time observe a marked increase in the number of suspicious looking gums, or other signs of what he so much dreads. The autumn advances with its hot days, and chilly, damp nights, and the fever increases in severity and numbers, accompanied by diarrhœa and vomiting, indicating congestion of the abdominal viscera, and an effort of nature to relieve it. * The same thing is observed in the jail, but still in a very modified form, from the fact apparently that the prisoners are made to sleep under cover at night, which nothing will induce the people outside to do, and that the jail wall keeps off much of the malarious exhalations from the soil outside to which the people there are fully exposed. The suspicious looking gums, however, increase in number, and some of them require treatment perhaps. The cold

* This symptom in extensive epidemics of malarious intermittent, often leads to the dread of cholera ; and on one occasion, within my own experience, actually led to an alarm of that disease having broken out with virulence.

increases as October advances and November sets in, and the fever becomes more remittent, or "continued" and obstinate. The diarrhœa becomes often dysenteric, and convalescence more tedious than before. By this time some extraordinary cases of hemorrhage from the bowels and nose will have been observed, indicative of the softening of the tissues; but some of the recoveries from the former will appear strange at first sight, until it is observed to occur in strong men, and like the diarrhœa mentioned above, to be an effort of nature to relieve great visceral congestion. Winter is now set in; and, although a good deal of fever is met with, and some of the cases are very "heavy," and rather "typhoid," and a good many people who had been suffering for some time previously die,—till well on in December, we find the general health of the people outside the jail improving. Pulmonary and hepatic disease prevails however, and there is a good deal of dysentery. The sickly season is over in fact. But what do we find in the jail throughout the winter and spring, or until the warm weather sets in? I reply, we find the disease which I have described in the previous paragraphs, induced, as I trust I have now shewn, by the ordinary diseases of the country acting on masses of men, strongly predisposed to scorbutic diseases, collected in one limited place—depressed in mind by the natural effects of punitive confinement, and separation from their homes, many of them (like the mountaineers of other countries) suffering even from "nostalgia." or genuine home sickness—sleeping in large numbers together in the same room, in which they are obliged to deposit their evacuations during the night, and which, therefore, cannot be *properly* ventilated, and their food and clothing reduced below the minimum of both quantity and quality necessary to sustain, in even moderate health, ordinary men in ordinary circumstances.

I observe His Honor the Lieutenant Governor draws attention to the want of sub-soil drainage as a probable cause of sickness, and doubtless when such a want exists, it is a great additional cause; but, I think, that in most of the Punjab jails it does not exist. The rain-fall is not generally *very* heavy in the country. The water is a good distance from the surface, and the sub-soil drainage is amply provided for by the deep ditch surrounding the jail outside, and the numerous wells inside, which are kept pure by constant work. It is difficult to imagine anything in the shape of a latrine more free from offensiveness than the latrines of our jails, or more free from general dirt or visible impurity than the jail buildings and the area they occupy. No one can say that the work exacted from the prisoners is laborious. No jail officer, medical or civil, will say that those who work harder than others suffer most. My opinion is that the men who do really most work in a jail are the *cooks;* and will any one tell me that *they* suffer very much from sickness?

The causes I have enumerated are those by the removal of which I have seen the disease cured, and its recurrence prevented, or so far modified as for a series of years to give but little trouble or anxiety, and to render the prisoners in a jail as remarkable for their good health, as for a series of years before they had been for the contrary, and by a renewal of all, or some of which, they have again become sickly. 1st, During and after the epidemic of 1855-1856, in the Mooltan jail the number of prisoners was considerably reduced by deaths, and releases on account of *extreme* sickness; and, as all those who were too ill to travel to their homes on being released were admitted into the dispensary, and with but very rare exceptions recovered,—and as I heard from time to time of many of the others,—I am in a position to assert pretty positively that release from prison saved their lives. I mention this prominently because I have heard this system of release pooh-pooh'd, by persons who argue only from having seen prisoners released in an utterly hopeless condition, which, of course, is an abuse. Release is an extreme measure which frustrates the law, and lets loose on the country men who have for a time justly forfeited their freedom; but as they have not forfeited their *lives* as well, we have no right to

kill them. By all means let them be exposed to the unavoidable hazards of imprisonment, which are great enough in all conscience. In 1857, again, the number of prisoners in this jail was further reduced, to make room for the large numbers expected from the mutinies, but who fortunately did not come in. In these ways, then, the number of prisoners was very considerably reduced (the exact number I cannot at present quote), and one great cause of sickness thereby removed, and the necessity for more ample jail accommodation demonstrated. 2nd, At the same time, the sick and weakly men, fed up by all sorts of aliment, meat, milk, ghee, vegetables, fruit, lime-juice,* and stimulants, &c., &c., "scorbutic gangs" were formed out of hospital, who got a modification of the same diet, according to the extent to which the disease had progressed, and ghee and extra green vegetables were added to the ordinary jail ration. But here again we were forced to frustrate the law, as undoubtedly the high feeding of the two first measures, although a necessity, was a luxury which reconciled many to imprisonment. It was, in fact, locking the stable-door after the horse was stolen, whereas a timely recourse to the last measure, or a modification of it, according to the locality of the jail and previous habits of the prisoners, would avert this necessity. Ghee and milk are best suited to prisoners from Sikh, Hindoo, and pastoral districts; but the frontier Pathan, and city Mahomedan requires flesh. In this way, then, a second great cause of sickness and "want of stamina" is removed and prevented, and that, too, without indulging the prisoners with luxuries; for a bare sufficiency of a man's most ordinary food cannot be considered a luxury; and you might as well attempt to deprive an Englishman of such an essential with impunity as very many of the inmates of own Punjab jails. It was tried for a long time in English jails and failed, and it has been tried in the Punjab for 16 years with a like result. 3rd. Such addition was made to the clothing as changed the appearance and feelings of the prisoners, from that of a heap of shivering paupers almost deprived of the use of their limbs during working hours, and huddled together at night like sheep in a pen, or pigs in a stye, to keep each other warm, in utter defiance of jail rules, and the neat little partitions (ridges of mud three or four inches high) between the sleeping places. In the Rawul Pindee jail, this huddling together was actually sanctioned by the medical officer, who was just as alive to its evils as any one else, but whose reply on being asked how he came to sanction such an evil, was significant, "what can I do?—the people are dying of cold." So they were; and so I saw prisoners do in the winter of 1855-1856, at Mooltan, until I got extra blankets for body covering, and made up thick warm quilts (called "jools" in the jail) from the old blankets (which were condemned and used to be destroyed or sold) for night use. This enabled me to remedy an evil which ought to have been mentioned under the 1st head, viz., want of surface ventilation in the sleeping wards, by keeping some of the doors open at night during even very cold weather and the whole of them in moderate weather. I have paid some attention to ventilation in jails and barracks, and have come to the conclusion that when a large number of people sleep on or near the floor of a room, no account of mere "roof ventilation" will remove the foul air generated by them. We know that people have been suffocated in a crowd, in a street, or even a more open place, and that a man can be suffocated in a well or shaft, so that mere cubic space is not sufficient. For my own part, I would much rather have men closely packed with the fresh air passing freely over their faces, than give them treble the cubic space laid down in regulations; and, to confine myself to jails and prisoners generally, I think I proved the correctness of this opinion at Mooltan, not in the jail only, but in batches of convicts passing through the place for transportation beyond seas. Gangs of these men arriving from Lahore and other places in carts and boats had been either huddled during the nights into "serais," or kept cooped up in boats very carefully protected, as was supposed,

* The use of lime-juice as a general prophylactic is the jail was prevented only by the difficulty of procuring it in sufficient quantity at the time; but any quantity of it can be laid in when the limes are in season.

from the weather by housing of grass and matting. They arrived often in most miserable plight, after losing several by deaths on the journey. On arrival, and until the whole batch of the season from all parts of the Punjab was collected, they were kept according to numbers and state of health in the jail, or a tolerably open building at some distance from it; or else in camp on the river bank, with merely the roofing of their boats *over head* to keep off the night dew of October and the early part of November. The records of the Judicial Commissioner's office will shew what consternation this latter measure produced on one particular occasion; and I shall not easily forget the looks of wonder and expressions of uneasiness I was met with, when I recommended that these men should be sent a journey of *five or six weeks to Kurrachee in open boats*, to the bottoms of which they were necessarily ironed. But after providing such food as their state and the regulations required and admitted of, as well as a sufficiency of body clothing, and giving them sufficient length of chain to enable them to ease themselves over the sides of the boats, large covers of cloth were made up, two for each boat, which were used as awnings during the day when necessary, and at night were spread over the convicts to keep them warm. To the surprise of the local authorities, these convicts enjoyed very good health during the journey; and the same plan was repeated for some years, until the boat system was abandoned in favor of sending small numbers by steamers. I well remember the care with which the coverings alluded to used to be brought back by the jailor and native doctor, both of whom had great experience in the management of convicts on such journies, and the value they attached to them as means by which they had earned praise from the authorities for the creditable manner in which they conducted their duties. Yet these convicts, after bring confined in the Kurrachee jail or in the hold of ships at sea, died in such numbers, at Kurrachee I believe, and at Port Blair I know, as to draw forth very strong remonstrances from the authorities at both places against sending them unhealthy convicts.

As a proof, however, of the efficiency of the measures I have now recommended, I will conclude this voluminous memo. by describing what took place at Mooltan in the autumn and winter of 1856, when from unprecedented rain and very general inundation of the country, from the overflow of the rivers Ravee and Chenab, and the canals of irrigation leading inland from them, in August the troops and general population were prostrated in enormous numbers with genuine intermittent fever. The troops, to the extent of 60 and 70 per cent. in hospital, and the remainder just able to crawl about, and the inhabitants of the city to such an extent that it was nothing uncommon to find nine people out of ten laid up. The military guards could not be relieved, and the civil courts were closed for want of umla or suitors. As the weather got cold, the fever, *in the city especially*, became dreadfully complicated with dysentery, which soon assumed a low, hemorrhagic, typhoid, type, for which the hakeems prescribed "turkaree," i. e. *green vegetables cooked with ghee and meat*, much to the astonishment of the people, and without any very clear notion themselves of *why* such treatment was recommended in some of their books. By the end of November, one-eighth of the population of the city had perished, and the pestilence was only stayed by the whole of the remainder (40,000 almost) rushing out of the place, and forming an immense encampment on the bank of the river some miles off. The troops suffered severely, too. One regiment was marched away from the place early in October, and so escaped mortality; but the regiment which remained, and was about 900 strong, lost about 40 men. What was the state of the jail at this time? It will be remembered that the epidemic and mortality of the previous winter led to a thorough weeding and thinning out of the numbers of our jails by death, and release of the sickly and weak, so that there was no crowding, and the ventilation of the wards was good from keeping the doors open, food and clothing were given in fair and sufficient quantity for *convicts*, and general sanitation was attended to carefully. In fact, the jail was in a high sanitary condition,

and the result was, that when the epidemic outside was at its height, the ratio of sick in it did not exceed 8 per cent., and there were only 3 deaths from the prevailing dysentery, and these occurred *after the improved dietary had been discontinued for a time* on account of its expense and the improved state of health of the prisoners. I don't mean to assert *positively* that these deaths ensued *solely* from a return for a time to the old dietary; but their occurrence is noteworthy to say the least. In 1857, a still further reduction of numbers took place, and the improved diet and clothing was continued. This state of things continued till 1862, when the number of prisoners once more reached nearly its former strength; and up to which time, from 1856 the sickness and mortality was only about one-third of what it had been from 1850 to 1856, as the annual returns will shew.

To sum up, then. The measures which long experience and much anxious consideration have forced upon my mind as of the most vital importance in preventing the unnecessary and avoidable sickness and mortality which we find occurring in the Punjab jails, by enabling the prisoners to bear up against morbific influences to which they are exposed, are, *more and more varied food, with animal matter always forming part of it, more clothing, and more jail accommodation.* In urging these points on the attention of the authorities, I appeal to my reports as a jail medical officer in former years, from which it will be seen how reluctantly the conviction of their necessity was forced on me by three years' experimenting; and, with reference to the opinion I have always entertained as to the very limited *rights* of convicts, and the stern necessity of ruling them with a rod of iron, if we want to effect any reformation in those we have to deal with. Scurvy may be with me a "hobby," perhaps; but what I call "antiscorbutic" treatment, as here condensed into a few words (and which, of course, includes also proper general sanitation), is applicable to the state of things we have to deal with, whether scurvy be at the bottom of it or not. I appeal to the experience of all medical men who for any length of time have had executive medical charge of jails in India or elsewhere, as to the effect of these precautions and remedies in jail sickness. I appeal to all experience of bodies of men, or even individual men, whether convicts in a penal colony, prisoners in an English jail or continental prison, soldiers in barracks or forts, sailors in ships, paupers in a workhouse, our British poor, and their condition *in times of famine or scarcity especially.* I appeal to the writings of men who guide the world in all such matters; and, finally, I appeal to the plain common sense of plain men, as to their effect on human health and life. All I ask is, give the plan as fair a trial as the old one has had. Even in a pecuniary point of view, it has succeeded admirably in my hands, as the earnings of the Mooltan prisoners will shew, on the simple principle of a healthy man being able to do more work than a sickly one. To these measures I must add one more, namely, improved supervision. The present system, by which the jail is generally made over to the care of the junior civil officer of a district, is, as a rule, most injurious, from the general want of experience and frequent changes of such officers. The sanitary medical and magisterial duties of a jail are so intimately mixed up, that it is next to impossible to define each; while to work the whole well together requires a degree of constant personal care and minute supervision, which no civil officer of a Punjab district that ever I have met with can bestow without neglecting some other duty. A medical officer is *obliged* to spend some portion of his time every day in the jail; and, under the present system, often finds himself directly subordinate to civil officers much junior to himself in age, rank, and knowledge of the management of masses of men. This I know clogs the machinery of jail management to an extent inconsistent with the well-being of the prisoners and the public interest. There is no reason why a medical man should not be as good a magistrate as others. We know in fact that they are so, and that their peculiar line of study fits them in an especial manner for the superintendence of large bodies of men in all countries, and in all situations. In the army even, we see that it

has been found actually necessary to extend *very much* the sphere of their interference. In India, we see that the Inspectors General of Prisons are medical men, and, all other considerations apart, it is but reasonable to suppose that Jail Superintendents of their own profession will work better under them than others. I say, then, *select* medical officers for the superintendence of the jails.

In conclusion, I give it as my opinion, that when the measures I have now recommended for general adoption in the Punjab jails, after having tested them in actual practice, have been carried out, the Pharmacopœia will be of use in these epidemics and not before. I do not mean to say that jails will not be liable to occasional outbursts of sickness,—for that would be contrary to the seeming nature of masses of men collected *anywhere* for a lengthened period,—but I do mean to assert that by such simple measures, general sanitation being of course always attended to, we have the means in our power of so managing and controlling these outbursts as to render them comparatively harmless.

J. Macintire,

Deputy Inspector General of Hospitals,
Peshawur Circle.

Murree, 24*th August* 1861.

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SECOND ANNUAL

SANITARY REPORT FOR BENGAL,

1865.

WITH APPENDICES,

CONTAINING

RETURNS OF SICKNESS AND MORTALITY AMONG THE BRITISH AND NATIVE TROOPS, AND ALSO AMONG THE PRISONERS IN THE BENGAL PRESIDENCY, FOR THAT YEAR.

CALCUTTA:
PRINTED AT THE MILITARY ORPHAN PRESS.
1866.

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Томпа

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No. 425 A.

FROM

MAJOR G. B. MALLESON,

Sanitary Commissioner for Bengal,

To

LIEUT. COLONEL H. K. BURNE,

Officiating Secretary to the Government of India,

Military Department.

Dated Simla, 30th July 1866.

SIR,

I have the honor to submit the Annual Sanitary Report for 1865. In accordance with the instructions of the Right Hon'ble the Secretary of State, conveyed in his Despatch No. 70, dated 9th March 1865, the European and Native portions of the Army are treated of separately. They are considered in the first and second sections. The third section is devoted to the prisoners, and the fourth and last to the general population of the country. Under these heads, I propose to state shortly the chief facts connected with the sanitary condition of each during the year, to describe the various measures which have either been determined on or carried out with a view to the improvement of that condition, and to narrate what benefits have resulted from the adoption of these measures. No reliable statistics are yet available regarding the mortality of the general inhabitants. In the section devoted to a consideration of their sanitary condition, a full account will be given of the steps which have been taken under each Local Government and Administration with the view of establishing an accurate registration of deaths, and of the measures which have been adopted for improving the public health. In an undertaking beset with so many difficulties, it appears to be very desirable that the experience which has been gained in any one Province should be made generally known, and that the success or failure which has attended any particular mode of procedure should be available for the guidance of all who are engaged in the same important work.

Division of the Report.

2. The Tables given in the appendix contain complete and accurate information regarding the sickness and mortality both among the European and Native Troops and also among the prisoners. I would take this opportunity of expressing my sense of the great value of Dr. Bryden's statistical labors and also of the assistance which he has always most willingly rendered both to the Sanitary Commission and myself. The Tables refer strictly to the year 1865, but advantage has been taken of the unavoidable delay which has occurred in the submission of this report to include a notice of all available information on sanitary

Dr. Bryden's Tables.

questions for the first half of the current year. As regards the causes of this delay, and the measures which I would suggest for ensuring full compliance with the instructions of the Secretary of State, for the future, I propose to address you separately.

No classification of diseases attempted.

3. With regard to these Tables, it may be added that the same system of nomenclature has been preserved as in the Tables of previous years. No attempt has been made to form groups of zymotic, miasmatic, enthetic or other classes of disease, but each affection of any importance has been entered separately under the common name by which it is known. There can be little question that the classification used in the Returns of the Registrar General, and adopted in the Army Medical Department, is open to serious objections. As Dr. Balfour remarks,* "zymotic disease includes within it such a heterogeneous assemblage that the term fails to convey any definite information; for instance, if it were stated that there was a great prevalence of zymotic disease in any place or barrack, it might mean itch, ague, opthalmia, yellow fever, rheumatism, sorethroat, scurvy, hooping cough, small-pox, gonorrhœa, worms, boils or intemperance." "Not only," he continues, "do the classes jumble together diseases in almost every respect dissimilar, but they also separate diseases having a close affinity to each other." "In regard to the classification," observes General Sir Alexander Tulloh,* "I conceive it to be of the most vital importance to the practical utility of the Returns and Reports that all arbitrary, or even scientific, distinctions should give way to the important object of being able to place before unprofessional persons in a concise form which all can understand the chief groups or classes of disease from which our troops suffer, distinguishing those that may have been caused, or at least influenced by the climates in which they are, or have been recently serving, as well as those which may have arisen from their own vices or habits." Dr. Parkes writes on the same subject: "Under the head of Miasmatic, more, under the head of Zymotic diseases, affections arising from the most different causes are included. The Statement of the amount of the Zymotic or Miasmatic class of diseases among a community gives some, but very imperfect information. It tells us very little, and that only in very general terms of the morbific conditions among such a community. But if, instead of such a general term, we state the proportion of the individual diseases, what a light is at once thrown on causes and the requisite mode of prevention."

* Appendix to the transactions of the Epi-demiological Society, Vol. 2, Part I.

SECTION I.

EUROPEAN TROOPS.

4. During the year 1865, the average strength of the British Troops in the Bengal Presidency amounted to 37,210. Of these, 2,241 were on an average sick every day of the year; the proportion of daily sick throughout the twelve months has been 60 per 1,000; the minimum of 45 per 1,000 having been reached in December, and the maximum of 73 per 1,000 having been reached in July; the total admissions into hospital during the year amounted to 59,735, or 1,605 per 1,000, the greatest number of admissions having taken place in August, and the smallest number in February. If these figures be compared with the statistics of each year since 1859, the results will be found to be as follows:—

Amount of sickness during 1865.

STATEMENT I.

Per 1,000 of Strength.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Number daily sick ...	90	84	82	76	69	62	60
Number of admissions .	2,228	2,051	2,045	1,970	1,838	1,641	1,605

In respect, therefore, of the daily proportion of sick, and the ratio of admissions per 1000, the year 1865 presents more favorable results than any of the six preceding years. Had the comparison been carried back to 1852-53, the earliest period included in the Tables appended to last year's Report, the same result would have been shown. The amount of sickness among the European Troops during 1865 was thus less than during any of the preceding twelve years.

5. Nine hundred and two deaths occurred during the year. The mortality thus amounted to 24·24 per 1,000, or if 16 deaths be included, which have not been entered in the body of the Return, as explained in the footnote to Table I, the deaths were in the ratio of 24·67 per 1,000. The greatest number of casualties occurred in June, and the smallest number in February. The ratio per cent. in which the chief diseases have contributed to the total mortality among European Soldiers during 1865, is as follows:—

Mortality during the year.

Fevers	15·30
Hepatitis	14·41
Cholera	12·86
Heat Apoplexy	12·31
Dysentery and Diarrhœa	11·86
Phthisis	5·66
Heart Diseases	4·21
Chest Affections	3·88
Small-pox	1·66
Delirium Tremens	1·44
Injuries, and deaths out of hospital	5·88
All other causes	10·53
	100·00

6. The general mortality of the European Force in Madras during 1865 is not shown by the Sanitary Commission for that Presidency, but the following Table extracted from their Annual Report exhibits the ratio of deaths per 1,000 at each station :—

Mortality compared with that of Madras and Bombay.

I.—Stations whose average annual strength has exceeded 500.

		Ratio of deaths per 1,000 of average strength.
1.	Wellington...	13·440
2.	Fort Saint George	14·880
3.	Theytmyoo	16·214
4.	Cannanore	16·848
5.	Kamptee	19·104
6.	Saint Thomas' Mount	20·040
7.	Secunderabad	20·700
8.	Bangalore	21·120
9.	Bellary	23·988
10.	Rangoon	24·880

II.—Stations whose average strength has been under 300.

1.	Calicut	11·808
2.	Singapore	12·903
3.	Trichinopoly	14·530
4.	Palaveram	16·080
5.	Port Blair	18·132
6.	Malliapooram	29·352
7.	Vizagapatam	37·680

From this it will be seen that, with the exception of three stations and two of these of small size, the annual mortality among the European Troops in Madras during 1865 has been considerably below the average annual mortality in Bengal during the same year. On the other hand, the results in the Bombay Presidency have been much more unfavorable. The mortality there has been greater in 1865 than it has been for many years previous. "The deaths in hospital were 402, and those out of hospital 16, giving together a mortality of 35·1 per 1,000 of strength, or considerably more than double what it had been in 1864.* The European portion of the army lost 16 men in every 1,000 from Cholera alone, the deaths from that cause being 45·7 per mille of all deaths. Fever caused the death of 3·1 in every 1,000, and Hepatic disease of 2·2. Dysentery and Diarrhœa of 2·4, and through Phthisis Pulmonalis the loss of life was 1·5 per mille." As regards the mortality in the two Presidencies from the chief diseases, the results are thus compared.

STATEMENT II.

In 1865.	Cholera.	Small-pox.	Fevers.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Phthisis Pulmonalis.	Apoplexy.
Bengal ...	3·12	·40	3·71	·35	2·23	·64	3·49	·08	1·38	2·98
Bombay...	16·	·2	3·1	·5	1·6	·8	2·2	·3	1·5	†

* Annual Report of Sanitary Commission for Bombay for 1865, pp. 12 and 13.

† Not separately shown.

7. In 1864 the mortality among European Soldiers in the Bengal Presidency amounted to 21·10 per 1,000. The ratio of the past year is therefore more than 3 per 1,000 higher than it was during 1864.

Mortality compared with that of 1864.

The causes of mortality, and the ratio per 1,000 in which each disease proved fatal during the two years, are given in the following Statement :—

STATEMENT III.

	Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Spleen Disease.	Respiratory Disease.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy.	Wounds and Accidents.	All other Causes.	Died out of Hospital.
1864	2·55	·35	3·14			1·46	·40	1·63		·67	2·95		·05	1·01	·87	1·61	·05	·05	·35	·40	2·15	1·41
1865	3·12	·40	3·71			2·98	·35	2·23		·64	3·49		·08	.97	1·02	1·38	·08	·05	·30	·24	1·99	1·21

Under Cholera, Small-pox, Fevers, Apoplexy, Dysentery, Hepatitis, Spleen disease, Heart disease, Dropsy, and Atrophy, there has been in each case an increase of mortality in 1865 above what it was in 1864, but in most the increase has been very trifling. The total increase in the ratio of casualties is to be ascribed mainly to an increased mortality from Cholera, Fevers, Apoplexy, Dysentery, and Hepatitis, due in some respects to the peculiar character of the hot season of 1865—a season remarkable for its high temperature generally throughout the country, and for the unusually late period to which it was protracted. As regards Delirium Tremens, Diarrhœa, Respiratory diseases, Phthisis, Wounds and Accidents, and "all other causes," 1865 bears favorable comparison with 1864, although the difference in each case is but small.

Mortality compared with that of previous year.

8. If the mortality of 1865 be compared with that of the years since 1859, the result will be found as follows :—

STATEMENT IV.

Died per 1,000 of Strength.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
In hospital ...	43·97	35·64	44·77	26·82	22·49	19·69	23·46
Out of hospital ...	1·38	1·13	1·16	1·29	2·59	1·41	1·21

Although the ratio of deaths during 1865 has thus been very materially less than that of the earlier years exhibited in this Statement, the result is not so favorable as that of either 1863 or 1864.

9. Such are the general results as regards the amount of sickness and mortality among the British Troops in the Bengal Presidency during 1865, and as compared with the results of preceding years, but in order to arrive at satisfactory conclusions, it is necessary to consider the statistics of the army

not only as a whole, but also to consider them separately in distinct portions, according to the climatic influences to which the men have been exposed. The necessity of dealing with an assemblage of facts by grouping those that are properly comparable, was insisted on in last Annual Report, and in support of the truth of this conclusion, it is only necessary to refer to Tables II to VI, and the facts they contain. In these Tables the army has been divided into five groups. The first embraces British Regiments quartered in Bengal Proper; the second those quartered at stations in the Dinapore, Benares, Oude, and Cawnpore districts; the third those in the Meerut and Rohilcund districts; the fourth those serving in the Agra district and in Central India, while the fifth includes all who were stationed in the Punjab. For convenience of reference, a sketch map has been added to this Report, from which the position of the chief Military stations can be ascertained. For future Reports, it is proposed to have a special map prepared, in which all the places referred to will be entered, and the various divisions or groups into which the army has been divided colored as so many provinces of disease. Although the distribution of the Native army and of the jails does not coincide altogether with that of the British Troops, the map will be found of service in considering all the sections of this Report.

Necessity of considering the Army in groups.

10. Accurate information is much required regarding the meteorological phenomena of different parts of the country. This is a want which has been fully acknowledged, and measures, which will hereafter be described, have been adopted for recording more accurate observations, at least in certain portions of this Presidency—measures which, it is hoped, may be gradually extended and improved. The following extract, taken from a preliminary Report by the Committee assembled at Roorkee to consider the best means of ventilating and cooling public buildings, contains some interesting information with regard to the mean monthly temperature of different stations in the various provinces:—

Meteorological phenomena.

"We may here remark that there is a wide difference in the different climates of India, between the moist warmth of Bengal, and the dry scorching climate of the North-Western Provinces; the equable temperature along the coast with its sea breezes, and the climate of the Himalayas, and other hilly districts, where the stations are from 5,000 to 7,000 feet above the sea, and the temperature some 20° or 25° lower than that of the adjacent plains.

"In some of these climates ventilation is a more simple question, but the consideration of the subject to be of practical utility must take the most difficult case, which, indeed, is the most common, viz.,—a climate which in the summer ranges in temperature from 80° to 110° Fahrenheit, and from the dry heat of hot winds to nearly saturation with moisture during the rains.

"The following notes upon temperatures are added for information. They are all the quotations of the kind to which access can be had at present:—

"Mean annual temperature—

Calcutta	79·4
Nynee Tal...	62·1
Roorkee	89·
Agra	91·9
Beawur	84·
Benares	92·3

These represent the mean temperature of the air in the shade throughout the 24 hours of each day in the month.

Mean monthly temperature at the same stations.

	Calcutta.	Nynee Tal.	Roorkee.	Agra.	Beawur.	Benares.
January	69·1	43·6	56·5	59·3	54·7	59·5
February	74·6	45·4	63·4	64·7	59·4	66·3
March	78·7	...	72·	75·4	71·	77·9
April	84·5	62·3	82·	87·7	84·4	87·
May	86·1	68·5	90·5	95·5	92·	92·6
June	84·4	...	90·4	93·1	87·1	90·2
July	85·4	65·3	84·7	85·2	80·	85·8
August	82·6	66·4	84·5	85·	79·2	83·7
September	83·5	64·	85·1	84·6	81·	83·6
October	81·5	58·	76·	73·1	73·2	78·5
November	74·3	50·	60·5	67·8	65·	69·3
December	68·7	43·	58·3	60·2	56·	..."

It is hoped that in future each Annual Report will contain a short summary of the meteorological phenomena of the year to which it refers.

Results in Bengal Proper.

11. The British Troops serving in Bengal Proper during 1865 averaged 2,028 in number. The average number of daily sick was 160, or 78 per 1,000, while the deaths amounted to 68, or at the rate of 33·53 per 1,000. The results compared with those of 1864 and of previous years are exhibited in the following Statement:—

STATEMENT V.

Per 1,000 of Average Strength.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Admissions	1,882	2,177	2,093	1,494	1,708	1,511	2,048
Daily sick	69	80	74	63	67	61	78
Deaths	50·9	39·0	30·0	26·4	20·6	24·9	33·5
Admissions from Cholera	43·5	27·8	13·5	7·3	4·8	6·0	7·4
Deaths from Cholera	23·4	14·8	6·5	6·1	3·1	2·5	6·4

It will be observed that the proportion of daily sick during 1865 has been higher than that of any year given in the Statement, except 1860; that the proportion of admissions has been higher than in any of these, except 1860 and 1861; and that the death-rate comes next in order to that of 1859 and 1860. The results are no doubt largely influenced by the extent to which Cholera has

prevailed in each year, and this information has therefore been given in the Statement.

Results in Dinapore, Benares, Oude, and Cawnpore.

12. In the second group, out of an average strength of 9,917, there was an average daily sick numbering 597, or 60 per 1,000, while the casualties amounted to 289, or in the proportion of 29·14 per 1,000. These results are thus compared with those of the years since 1859.

STATEMENT VI.

Per 1,000 of Average Strength.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Admissions	2,390	2,266	1,610	1,515	1,576	1,419	1,470
Daily sick	109	99	76	68	65	59	60
Deaths	50·2	44·2	17·5	13·9	21·7	26·5	29·1
Admissions from Cholera	11·2	32·8	2·6	1·1	11·2	8·8	6·8
Deaths from Cholera	5·5	19·0	1·0	·1	7·6	6·7	5·5

The mortality in this group has fluctuated from 13·9 in 1862 to 50·2 in 1859. The daily proportion of sick during 1865 has been less than that of any year excepting its immediate predecessor, but if the seven years be arranged in order of greatest mortality, 1865 will be found to take the third place. Much of the fluctuation in the statistics of this group depends on the extent to which Cholera has prevailed. This will be referred to hereafter, but it will be observed that the ratio per 1,000 of admissions from Cholera has varied from 32·8 to 1·1, and the mortality caused by the disease from ·1 to 19·0.

Results in the Meerut and Rohilcund Districts.

13. In the Meerut and Rohilcund districts, out of a strength of 5,122, 341 or 66 per 1,000 were always in hospital, and the deaths amounted to 101, or 19·72 per 1,000. Taking the statistics of each year since 1859, the comparison with 1865 stands as follows :—

STATEMENT VII.

Per 1,000 of Average Strength.	* 1859.	* 1860.	* 1861.	* 1862.	* 1863.	1864.	1865.
Admissions ...	2,400	2,115	2,105	1,841	1,634	1,687	1,524
Daily sick ...	95	85	104	92	79	72	66
Deaths ...	57·7	37·6	50·3	22·3	28·7	17·3	19·7
Admissions from Cholera	34·6	17·3	33·1	5·9	8·7	0·2	1·2
Deaths from Cholera ...	19·4	8·6	21·7	3·6	7·6	0·1	0·7

The comparison both in this and in the last group cannot be made with perfect fairness before 1864. The statistics of the previous years have included

* Includes Cawnpore.

Cawnpore with Meerut and Rohilcund. Since 1864, it has been placed with Dinapore and Benares. Subject to this correction, the results of 1865 are more favorable than those of any of the years given in this Table except 1864.

Results in Agra District and Central India.

14. In this group the strength averaged 4,689, the average number of sick was 302, or 64 per 1,000; 126 deaths occurred, or in the proportion of 26·87 per 1,000. Since 1859, the statistics of sickness and mortality in this group have been as follows :—

STATEMENT VIII.

Per 1,000 of Average Strength.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Admissions	2,850	2,627	2,950	2,676	1,901	1,870	19,35
Daily sick	84	90	95	88	67	64	64
Deaths	44·0	63·1	66·1	47·5	21·8	17·3	26·8
Admissions from Cholera	10·2	65·7	60·4	38·6	6·0	0·8	11·3
Deaths from Cholera	2·3	32·8	41·2	26·9	3·8	0·6	7·2

The rate both of sickness and mortality in this Province has, as a rule, been high, and 1865 has proved no exception. Although much more favorable than those of 1859, 1860, and 1861, the results of the past year fall much short of those of either 1863 or 1864.

Results in the Punjab.

15. The remaining group includes all the Regiments stationed in the Punjab. During the past year the strength of British Soldiers in this Province averaged 13,880, the daily sick amounted to 744, or 53 per 1,000, and the proportion of deaths was 18·59. During the last seven years, the ratio of admissions of daily sick and of deaths per 1,000 of average strength is thus shown :—

STATEMENT IX.

Per 1,00 of Average Strength.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Admissions	1,772	1,557	1,892	2,102	2,069	1,698	1,558
Daily sick	65	60	64	66	64	56	53
Deaths	20·1	14·2	51·4	27·7	18·1	14·5	18·5
Admissions from Cholera	0·7	0·4	56·6	22·8	0·1	0·	0·3
Deaths from Cholera	0·	0·1	36·1	12·7	0·1	0·	0·1

Although the ratio of admissions and of daily sick during 1865 has been lower than that of any year previous, the mortality has been 4 per 1,000 higher than it was in 1864, and slightly higher than in 1863.

Causes of mortality in different groups in 1864 and 1865.

16. It thus appears that in all the groups the mortality of 1865 has exceeded that of 1864. It will, therefore, be well to examine what diseases have in each contributed to this result. The following Statement gives a

comparative view of the causes of mortality during 1864 and 1865 in the several Provinces :—

STATEMENT X.

	Cholera.	Small-pox.	Fevers.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Disease.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy.	Wounds and Accidents.	All other Causes.	Died out of Hospital.	Total.
	Died per 1,000 *in Bengal Proper.*																		
1864	2·50	...	5·00	·50	·50	3·49	·50	2·50	...	...	...	2·00	·50	...	1·50	...	1·50	4·49	24·98
1865	6·41	...	7·40	2·96	...	4·93	2·96	2·46	...	·99	·49	1·48	...	...	·49	...	·49	2·47	33·53
	Died per 1,000 *in Dinapore, Benares, Oude, and Cawnpore.*																		
1864	6·77	·49	3·96	2·42	·58	1·65	·87	2·42	...	1·26	·78	1·74	...	...	·10	·29	2·03	1·16	26·52
1865	5·55	·20	4 94	4·54	·40	2·72	·71	3·03	·10	·91	1·21	1·11	...	·10	·40	·20	1·21	1·81	29·14
	Died per 1,000 *in Meerut and Rohilcund Districts.*																		
1864	·16	·51	2·53	1·34	...	1·35	·67	4·03	...	1·34	·34	1·01	...	...	...	·34	3·19	·84	17·65
1865	·78	1·76	3·13	3·71	·19	1·56	·19	2·55	·19	·19	1·17	·98	...	...	...	·19	2·54	·59	19·72
	Died per 1,000 *in the Agra District and Central India.*																		
1864	·62	·62	2·47	1·03	·41	2·48	·62	2·47	...	·62	·82	·82	..	...	...	·62	2·88	·83	17·31
1865	7·25	...	3·20	2·13	1·07	1·07	·85	5·55	·21	·43	1·28	·85	·21	...	·64	...	1·28	·85	26·87
	Died per 1,000 *in the Punjab.*																		
1864	·06	·19	1·89	·95	·44	1·32	·50	2·58	·06	·95	·88	1·07	...	·13	·57	·31	1·32	1·32	14·54
1865	·14	·29	2·67	2·23	·07	1·73	·14	3·46	...	1·08	·79	1·51	·14	·07	·22	·44	2·74	·87	18·59

The increase and decrease of mortality from every disease in 1865 as compared with 1864 can here be seen at a glance. It is not necessary to enlarge on particulars which are so clearly shown, but it may be remarked that the increased fatality of the diseases which have been noted in a previous paragraph as mainly the causes of the greater mortality of the year was not confined to one particular group. This remark applies particularly to fever and apoplexy.

Comparison of the groups in 1865.

17. Table No. VII exhibits the comparative sickness and mortality in the various provinces or groups during the year 1865, and also shows the proportion in which each disease contributed to the admissions and to the deaths. The total ratio of sick, of admissions, and of deaths per 1,000 is also in each case noted. In the last column has been shown the proportion in which the various diseases contributed to invaliding. Leaving this important subject for separate consideration, the following Statement concisely exhibits the comparative results of the year :—

STATEMENT XI.

Province.	Ratio per 1,000		
	Of admissions into Hospital.	Of deaths from all causes.	Of deaths from Cholera.
Bengal Proper ...	2,048	33·53	6·41
Dinapore, Benares, Oude, and Cawnpore...	1,470	29·14	5·55
Meerut and Rohilcund ...	1,524	19·72	·78
Agra and Central India ...	1,935	26·87	7·25
Punjab ...	1,558	18·59	·14

Mortality from Cholera.

18. The total deaths from cholera during the year have been 116, or at the rate of 3·12, while the ratio of admissions has been 4·3 per 1,000.

STATEMENT XII.

Per 1,000 of Strength.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Admitted from Cholera	16·8	22·6	37·1	15·7	5·5	3·7	4·3
Died	8·6	12·0	23·7	9·6	4·0	2·5	3·1

From the above Statement, which shows the comparative proportion of admissions and deaths from cholera throughout the Bengal Presidency during the past seven years, we learn that the disease has been slightly more prevalent and fatal among British Soldiers in 1865 than in 1864, but that excepting the latter year, the Returns are more favorable as regards cholera than those of any year since 1859.

The ratio of admissions and of deaths in the various provinces has already been separately given in the Statements contained in paragraphs 11 to 15.

Distribution of Cholera.

19. The distribution of cholera throughout the various stations and provinces and its comparative prevalence during the various months of the year are clearly shown in Table XI. The disease has been most prevalent in the Agra and Central India Districts, the admissions there having been 11·3, and the deaths 7·25 per 1,000. In Bengal Proper the admission rate was 7·4, and the death rate 6·41. In the Punjab, out of a strength of 13,880 men, there were but 4 cases and 2 deaths. The facts regarding the natural distribution of cholera in the different provinces in the different months of the year form a subject of great interest and practical importance. The Regiments which chiefly suffered during 1865 were Her Majesty's 97th Regiment at Saugor, which lost 11 men; the 91st at Jubbulpore and Nagode, which lost 8 men; the 1-11th at Fyzabad had 11 deaths out of 13 admissions, and the 46th Regiment, 8 deaths out of 10 admissions.

First appearance of Cholera in Hospitals.

20. The extreme virulence of cholera among patients in hospital under treatment for other diseases was pointed out in the Report of the Cholera Commission of 1861.* It was shown that during the epidemic of that year, while among the healthy men of the European Regiments which suffered, the percentage of cases to strength was 7·7, among patients in hospital it was 14·7, and that the deaths to strength which were 5·1 among the former were 11·6 among the latter. "The virulence of the disease among the hospital patients was clearly more than twice as great as it was among the healthy strength of the Regiments." But not only did the patients in hospital suffer in very much larger proportion than the men in barracks, it was proved that in very many instances the first cases among the European Troops occurred in the hospitals, and there was the strongest reason for believing that a large proportion of those which occurred among the healthy men had in reality their origin also in the hospitals. These features were not peculiar to the epidemic of 1861, although from its severity they became more marked then, and were first prominently noticed in the Report of the Cholera Commission of that year. During 1865, the same remarkable fact has been observed that in several instances the first case of cholera appeared in a hospital. To what is this to be ascribed? The Report of the Commission has clearly shown "that the extreme liability of the patients in hospital to be attacked by cholera depended mainly not upon their previous illness, but upon some special local conditions which fostered the propagation of the disease in the hospital buildings." The facts which are adduced in the Report place beyond all doubt that, during the great epidemic, the hospitals formed foci from which the disease spread: but these facts do not explain why the first cases in so many instances broke out in the hospitals. May it not be that the poison resulting from cholera in one year may remain lurking within the building ready to spring again into life when the proper season for its re-appearance has come round, and the peculiar atmospheric conditions necessary for its maturity have been brought into play?

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Increase of mortality from Cholera.

21. In last Annual Report it was remarked that "there is unhappily great reason for believing that the proportion of deaths from cholera to cases treated has gone on for many years steadily increasing among the European Troops in all parts of India. The percentage rose in Bengal between 1818 and 1854 from 26·7 to 42; in Bombay, during the same period, from 18·5 to 43·2, and in Madras, between 1829 and 1851, from 27·1 to 62·3." Since 1854 it was shown that in the Bengal Presidency the percentage of deaths to cases treated has never been under 50; that in 1861 it was 64·1; in 1862, 61·3, in 1863, 75·1, and in 1864, 72·6. The statistics of 1865 show results very similar to those of 1864. The ratio per cent. of fatal cases has amounted to 72·5.

As regards the Native Troops, between the years 1826 and 1861, the fatal cases were in the proportion of about 30 to 40 per cent. of those treated. In 1862, the ratio was 50·3; in 1863, 57·0, and in 1864, 44·0. During the past year, omitting the Bhootan Field Force, where the mortality was 59·16 per cent. to admissions, there has been a percentage of fatal cases amounting to 49·73.

In Jails, the percentage of deaths among cholera cases was—

In	1859	...	...	...	... 46·57
„	1860	...	...	...	... 37·55
„	1861	...	...	...	... 41·63
„	1862	...	...	...	... 36·36
„	1863	...	...	...	... 40·10
„	1864	...	...	...	... 37·31
„	1865	...	...	...	... 45·69

Measures for the prevention of Cholera.

22. The experience of the past year has only served to strengthen the opinion which was expressed in last Annual Report as to the benefit of moving into camp on the appearance of epidemic cholera, and the importance of a strict observance of the rules on this subject which were prepared by the Cholera Commission of 1861. This question was again very carefully considered by the Sanitary Commission during the past year, and a review of all the instances in which these rules had been acted on in 1865 showed the results to have been in all cases satisfactory. In a Report which was submitted to the Government on this important subject, the Commission remarked—"However much the existing rules may be found hereafter to require amendment, we believe that they are sufficient if strictly carried out to render it almost impossible that mortality from cholera such as that which has sometimes taken place should again occur among the troops in this Presidency. We believe that whenever there has been an excessive mortality from cholera, it has been due to causes which might have been avoided, and which could not have come into operation had proper rules existed. Believing this, it will, we think, be matter for great regret if any relaxation of the existing rules be permitted until proof of the necessity of a change has been given."

Comparative prevalence and fatality of Cholera among European and Native Troops.

23. The total admissions from cholera among the European Troops in 1865 amounted, it has been seen, to 4·3 per 1,000. Among the Native Troops composing the Bhootan Field Force, they amounted to 37·6 per 1,000, but the ratio in the Native Army generally was only 5·7. If the proportion of admis-

sions and deaths from cholera among European and Native Troops in the various provinces be compared, the results will stand thus :—

STATEMENT XIII.

Per 1,000 of average Strength.	Bengal Proper and Assam.		Dinapore, Benares, Oude, and Cawnpore.		Meerut and Rohilcund.		Agra and Central India.		Punjab.		Bengal Presidency.	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Admissions	7·4	19·4	6·8	4·4	1·2	0·2	11·3	5·4	0·3	0·1	4·3	5·7
Deaths	6·4	9·2	5·5	2·5	·7	0	7·2	3·1	·1	0	3·1	2·8
Died per cent. of Admissions ...	86·6	47·4	80·8	57·1	66·6	0	64·1	59·0	50·	0	72·5	49·7

The relative fatality of cholera cases among European and Native Troops in the several provinces is also here shown. Although some of the small stations are garrisoned entirely by Native Corps, and although a perfectly fair comparison cannot, therefore, be instituted between the sanitary condition of the British and Native Force in any particular province, the information given in this and similar Statements to follow is valuable. While cholera has been considerably more prevalent among Natives than among Europeans, the mortality among the former has been less; the ratio of fatal cases having been about one-half greater among the latter than among the former.

Mortality from Small-pox.

24. During the year, 160 cases of small-pox have been recorded, but of these only 15 proved fatal. The disease contributed but ·40 per 1,000 to the mortality. Its prevalence in each month and its distribution by stations and provinces are shown in Table X. If the statistics of the disease during the past seven years be compared, they will be found as shown in the following Statement :—

STATEMENT XIV.

Per 1,000 of Strength.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Admitted from Small-pox	2·2	3·4	5·2	0·3	1·1	2·2	2·9
Died	·32	·49	·96	·04	·24	·35	·40

It will be observed that, during the months of July, August, September, and October, not a single case of this disease occurred; nor is this disappearance during a certain portion of the year accidental. Dr. Bryden has shown, by a careful analysis of the Returns of several years, that from the month of April, when the disease attains its maximum, it gradually declines until in the months of August and September it becomes for the time absolutely extinct. The following Statement, which has been prepared by Dr. Bryden, exhibits the admissions from small-pox during each month of the year from among the European Army from 1858 to 1863, and illustrates the truth of this statement :—

STATEMENT XV.

Small-pox in the European Army of the Bengal Presidency from 1858 *to* 1863.

Months.	Admissions of each month.	Deaths of each month.	Admitted per cent. of total admissions.	Died per cent. of treated.
January	86	22	9·67	25·58
February	68	7	7·65	10·30
March	120	18	13·50	15·00
April	293	49	32·96	16·72
May	141	52	15·86	36·88
June	78	14	8·77	18·56
July	18	4	2·03	
August	1	...	·11	0
September	...	...	0	0
October	...	...	0	0
November	27	2	3·04	7·14
December	57	4	6·41	
	889	172	100·00	

Comparative prevalence and fatality of Small-pox among European and Native Troops.

25. The ratio of admissions and deaths from small-pox among the European and Native Troops quartered in the different provinces of the Bengal Presidency during 1865 is thus compared:—

STATEMENT XVI.

Per 1,000 of average Strength.	Bengal Proper and Assam.		Dinapore, Benares, Oude, and Cawnpore.		Meerut and Rohilcund.		Agra and Central India.		Punjab.		Bengal Presidency.	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Admissions ...	1·0	1·6	2·4	4·9	6·2	2·7	3·2	0·5	1·4	1·5	2·9	2·1
Deaths ...	0	0	·20	·47	1·76	·45	0	0	·29	·38	·40	·28
Died per cent. of Admissions ...	0	0	8·33	9·68	28·12	16·67	0	0	20·00	25·00	14·28	13·04

Mortality from Fever.

26. During 1865 fevers have as usual formed one of the most prevalent forms of sickness, and one of the chief causes of mortality. The admissions from the different varieties

of fever have amounted to 528 per 1,000, and the deaths, to 3·71; compared with former years, the results are as follows:—

STATEMENT XVII.

Per 1,000 of average Strength.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Admitted from Fever ...	792	723	715	805	739	542	528
Died	6·58	4·85	3·97	3·34	2·82	3·14	3·71

It is instructive to observe in what months the greatest number of deaths from fever occurred.

In January	there were	5	deaths from fever.	In July	there were	17	deaths from fever.
„ February	„	3	„	„ August	„	10	„
„ March	„	4	„	„ September	„	19	„
„ April	„	12	„	„ October	„	15	„
„ May	„	23	„	„ November	„	12	„
„ June	„	13	„	„ December	„	6	„

The highest mortality from fever was in May. Among the Native Troops, there were two months—May and October—in which the casualties greatly exceeded those of the other months.

Comparative prevalence and fatality of Fevers among European and Native Troops.

27. The following Statement illustrates the comparative prevalence and fatality of fevers among the European and Native Troops during 1865:—

STATEMENT XVIII.

Per 1,000 of average Strength.	Bengal Proper and Assam.		Dinapore, Benares, Oude, and Cawnpore.		Meerut and Rohilcund.		Agra and Central India.		Punjab.		Bengal Presidency.	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Admissions ...	618	1140	445	663	388	589	707	842	580	667	528	747
Deaths ...	7·40	7·63	4·94	5·22	3·13	1·32	3·20	4·17	2·67	3·61	3·71	4·38

It is well worthy of notice that in each Province the Native Troops have suffered very much more than the Europeans from this class of diseases, and the mortality per 1,000 has been greater.

28. Dysentery and diarrhœa have together caused an admission-rate of 140·4 per 1,000, and a death-rate of 2·87. Compared with those of former years, the results stand thus :—

Mortality from Bowel Complaints.

STATEMENT XIX.

Per 1,000 of Average Strength.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Admitted from Bowel complaints ...	277	211	222	168	144	133	140
Died ...	12·58	5·64	5·36	3·56	3·73	2·30	2·87

While somewhat higher than during 1864, bowel complaints have been less prevalent and fatal during 1865 than during any of the other years named. On reference to Table VII, it will be seen how much more common and fatal bowel affections are in Bengal Proper than in any of the other provinces. The information there contained is condensed in the following Statement :—

STATEMENT XX.

Per 1,000 of Average Strength.	Bengal Proper.	Dinapore, Benares, Oude, and Cawnpore.	Meerut and Rohilcund.	Agra and Central India.	Punjab.
Admitted from Bowel complaints ...	295·9	140·0	105·9	194·5	106·1
Died ...	7·89	3·43	1·75	1·92	1·87

The above abstract shows that while in Bengal Proper the admissions from bowel complaints among the European Troops were in the ratio of 295 per 1,000, in Meerut and Rohilcund they were only 105, or little more than one-third, while the mortality, which in the former was nearly 8 per 1,000, fell in the latter to 1·75.

29. The annexed Statement exhibits the comparative ratio of admissions from diarrhœa and dysentery among European and Native Troops, and the ratio of deaths to strength :—

Comparative prevalence and fatality of Bowel Complaints among European and Native Troops.

STATEMENT XXI.

Per 1,000 of Average Strength.	Bengal Proper and Assam.		Dinapore, Benares, Oude, and Cawnpore.		Meerut and Rohilcund.		Agra and Central India.		Punjab.		Bengal Presidency.	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Admissions from Bowel complaints...	295·9	480·2	140·0	140·6	105·9	78·8	194·5	132·2	106·1	109·4	140·4	180·7
Deaths ...	7·89	8·61	3·43	3·10	1·75	·90	1·92	1·22	1·87	·95	2·87	2·62

The same remark which has been made with regard to fevers applies equally to bowel complaints. Natives enjoy no immunity from these affections; in Bengal

Proper and Assam the ratio both of admissions and of deaths among them from dysentery and diarrhœa has been much in excess of what it was among Europeans.

Mortality from Hepatic Disease.

30. During the year 2,325 cases of hepatic disease were treated, of which 130 proved fatal, or in the ratio of 3·49 per 1,000 of average strength. The following Statement shows the relative prevalence and mortality from this affection during the past seven years :—

STATEMENT XXII.

Per 1,000 of Average Strength.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Admitted from Hepatic disease ...	67	63	60	62	63	56	62
Died	4·86	3·52	2·89	3·03	3·64	2·95	3·49

The proportion of admissions has fluctuated but little during this period. It will be seen from Table VII that the disease is more prevalent and contributes more largely to the mortality in the Upper Provinces than it does in Bengal Proper. In the latter the admissions were 40 per 1,000, in Meerut and Rohilcund they were 72, and in the Punjab, which was the healthiest province, they were 63. In Bengal the deaths from affections of the liver were 2·46 per 1,000. In Agra and Central India they were 5·55, and in the Punjab, 3·46.

Hepatitis among European and Native Troops compared.

31. The comparative prevalence and fatality of hepatic disease among European and Native Troops during 1865 are shown in the following Statement :—

STATEMENT XXIII.

Per 1,000 of Average Strength.	Bengal Proper and Assam.		Dinapore, Benares, Oude, and Cawnpore.		Meerut and Rohilcund.		Agra and Central India.		Punjab.		Bengal Presidency.	
	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.	Europeans.	Natives.
Admissions ...	40·4	1·7	59·5	2·5	72·0	1·6	62·1	2·0	63·5	1·9	62·5	2·0
Deaths	2·46	·20	3·03	·47	2·55	·45	5·55	·24	3·46	·09	3·49	·28

The results of this Statement bear a striking contrast to those of the similar Statements which have been already given. All the other chief diseases the prevalence and fatality of which among European and Native Troops have been compared show that both have suffered to no inconsiderable degree. Although the ratio of deaths to admissions from these causes has been less among the sepoys than among British soldiers, cholera, small-pox, fevers, and bowel complaints have actually been more prevalent among the Native than among the European Troops. With hepatitis, however, the case is very different, for while 62·5 per 1,000 of the average strength of the latter were admitted into hospital with this affection, only 2·0 per 1,000 were admitted of the average

strength of the former, and the death-rate from disease of the liver, which in the one was 3·49 per 1,000, in the other was only ·28.

Mortality from Apoplexy.

32. From apoplexy there were 211 admissions during the year, or in the proportion of 5·7 per 1,000; the deaths from this cause were 111, or 2·98 per 1,000; the statistics of this disease since 1859 are as follows :—

STATEMENT XXIV.

Per 1,000 of Average Strength.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Admitted from Apoplexy	8·7	6·2	2·2	1·8	2·3	2·2	5·7
Died	4·10	2·56	1·34	1·19	1·09	1·46	2·98

There was thus not only a greater prevalence of apoplexy during 1865, but the mortality from it was greater than during any year since 1859, a time when some of the troops still were subject to unusual exposure. Nearly all the cases in 1865 occurred during the unusually hot months of April, May, and June. Of the 111 casualties from this cause, no less than 103 occurred during those months.

Delirium Tremens.

33. The diminution of late years in the number of cases of delirium tremens is encouraging, and gives hope that the many salutary measures which have been adopted to improve the moral position of the British soldier in India have had good effect. The following are the statistics of the disease during the last seven years :—

STATEMENT XXV.

Per 1,000 of Average Strength.	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Admitted from Delirium Tremens ...	9·2	8·1	4·6	3·2	3·6	3·6	3·6
Died	·69	·77	·45	·44	·48	·40	·35

Venereal Disease.

34. During 1865, 8,454 cases of venereal disease were admitted into hospital, or at the rate of 227 per 1,000. The ratio of admissions from this disease per 1,000 during the past seven years has been as follows :—

STATEMENT XXVI.

	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Admitted per 1,000 of Average Strength	359·0	338·0	369·1	318·1	281·7	254·9	227·2

The diminution of this disease is marked, and it is hoped that the measures which have lately been adopted for its prevention, and which will be referred to hereafter, will have the effect of still more decidedly reducing this fruitful cause of admission into hospital.

Comparison of Stations.

35. The general statistics of sickness and mortality in the principal military stations are compared in Table VIII. From this it appears that at six of them the deaths from all causes amounted to less than 10 per 1,000, viz., Moradabad, Roorkee, Nowgong, Subathoo, Jullundur, and among the men of the road-making detachment in the Murree Hills. The mortality of only 3·94 per 1,000 at the plains-station of Moradabad is remarkable. In 17 stations, viz., Fort William, Berhampore, Darjeeling, Dinapore, Azimgurh, Shajehanpore, Bareilly, Seepree, Jhansie, Umballah, Dugshaie, Ferozepore, Sealkote, Rawul Pindee, Campbellpore, Nowshera, and Peshawur, the mortality was less than 20 per 1,000. In 15 stations, viz., Hazareebaugh, Roy Bareilly, Lucknow, Seetapore, Futtehgurh, Cawnpore, Meerut, Muttra, Agra, Morar, Gwalior, Jubbulpore, Dehra Ishmail Khan, Kangra, and Umritsur, the mortality was above 20, but less than 30 per 1,000. In six the deaths numbered between 30 and 40 per 1,000. These were Barrackpore, Allahabad, Delhi, Mooltan, Mean Meer, and Attock. At Dum-Dum the casualties amounted to 57·18 per 1,000; at Benares to 41·08; at Fyzabad to 57·7; at Nagode to 56·82; at Saugor to 51·22; at Lahore Fort to 51·47. Among the Artillery of the Bhootan Field Force, it was 76·92. In some of these, however, the number of men present was very small.

The diseases which chiefly prevailed at these stations can be ascertained from Table IX, while the causes of death are detailed in Table XII. It is only necessary to refer to the latter to see how cholera, fever, and apoplexy have affected these results. At Lucknow, for example, out of a total of 51 deaths, 31 were from these diseases. At Fyzabad, out of 55 deaths, 38 were due to the same causes. At Meerut, of 40 deaths, one-half were due to the same.

In some instances, the average strength has been too small to form the basis of accurate calculations, while in any general analysis the Convalescent Depôts must also be omitted, as they are composed entirely of men sent to the hills for change of climate, the amount of sickness and mortality among whom must necessarily be much in excess of what it otherwise would have been.

Comparison of Stations with previous years.

36. Preserving the divisions of stations as given in the last paragraph, according to the amount of mortality which has occurred in them during 1865, it will be interesting to compare these results with those of previous years, and ascertain how far they may be considered exceptional.

STATEMENT XXVII.

	Died per 1,000 of Average Strength.						
	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Moradabad ...	22·72	25·92	28·32	9·34	7·63	14·85	3·94
Roorkee ...	[1] ...	20·31	8·50	19·64	11·92	9·16	7·22
Nowgong ...	[1] ...	[1] ...	8·33	8·00	27·91	9·39	4·81
Subathoo ...	[2] 11·72	[3] 9·09	[2] 18·62	9·88	24·42	[2] 11·34	4·99
Jullundur ...	10·70	7·35	10·84	12·02	[4] 7·62	16·79	[4] 6·44

[1] Not occupied; [2] 8 months; [3] for 9 months; [4] for 11 months.

It will be observed that in all these five stations the mortality of 1865 has been less than in any of the previous six years. In Moradabad the ratio has varied from 3·94 in 1865 to 28·32 in 1861; at Roorkee, from 7·22 in 1865 to 20·31 in 1860; at Nowgong, from 4·81 in 1865 to 27·91 in 1863; at Subathoo, from 4·99 in 1865 to 24·42 in 1863; in Jullundur, from 6·44 in 1865 to 16·79 in 1864. Although the record of such facts is valuable, it must not be lost sight of that the amount of mortality is often no fair index of the healthiness or unhealthiness of the stations in which it occurs, but is frequently due to the unwholesome influences to which Regiments have been previously exposed, and the ill effects of which are not soon to be shaken off.

If the next group of stations—those in which the mortality exceeded 10, but was less than 20 per 1,000—be compared with their conditions in previous years, the results are as follows :—

STATEMENT XXVIII.

	Died per 1,000 of Average Strength.						
	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Fort William ...	25·94	51·75	21·78	35·23	22·82	21·52	13·94
Berhampore ...	60·09	44·44	21·82	20·27	22·42	24·75	13·60
Darjeeling ...	...	...	...	...	12·19	13·70	†14·20
Dinapore ...	62·58	46·22	23·00	15·27	11·89	23·76	17·89
Azimgurh ...	28·11	48·38	...	...	2·98	*5·05	†19·61
Shajehanpore ...	21·80	31·38	†7·62	9·43	13·00	12·99	10·33
Bareilly ...	18·22	21·83	14·31	5·47	13·10	14·76	14·07
Jhansie ...	...	‡102·92	32·10	75·42	12·13	18·95	17·99
Umballah ...	14·54	14·27	45·60	7·36	11·29	9·18	14·22
Dugshaie ...	*21·20	*6·90	*8·53	†16·41	§16·97	†16·27	‖13·50
Ferozepore ...	14·02	9·21	11·25	19·65	§14·32	15·73	19·04
Sealkote ...	10·62	10·81	8·70	13·88	11·38	9·86	11·81
Rawul Pindee ...	7·50	14·39	11·90	15·71	‖5·45	12·57	13·10
Campbellpore ...	8·64	...	6·00	¶2·86	¶0.	†16·55	19·61
Nowshera ...	†14·26	7·39	6·21	9·70	†9·10	7·43	19·64
Peshawur ...	15·15	12·08	12·27	62·94	16·86	†14·91	17·24

* 7 months; † 9 months; ‡ 11 months; ¶ 6 months; § 10 months; ‖ 8 months.

The next Statement includes those stations in which the deaths have been between 20 and 30 per 1,000 in 1865, and exhibits the comparative mortality of the past seven years.

STATEMENT XXIX.

	Died per 1,000 of Average Strength.						
	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Hazareebaugh ...	35·13	10·31	17·73	17·25	21·92	11·73	22·33 *b*
Roy Bareilly ...	39·57	21·69	12·34	3·41	*b* 7·46	*a* 9·01	20·73
Lucknow ...	48·50	31·14	14·00	15·29	28·51	44·53	27·07
Seetapore ...	29·57	18·66	14·66	8·25	6·76	13·78	20·58
Futtehgurh ...	14·85	10·36	*a* 23·04	18·22	8·82	20·00	24·63 *b*
Cawnpore ...	98·40	54·55	60·16	14·30	39·59	25·64	0·45
Meerut ...	23·30	12·08	59·17	28·95	13·34	13·30	2·43
Muttra ...	14·81	89·38	23·06	8·00	*b* 10·33	*b* 9·94	22·84
Agra ...	25·52	72·70	85·25	55·51	34·98	15·45	21·69
Morar ...	35·89	106·33	179·02	69·66	19·30	15·22	26·91
Gwalior ...		.....	.....	84·39	16·60	19·32	23·47
Jubbulpore ...	.....	28·57	18·58	23·61	20·73	19·81	20·35
Umritsur ...	34·40	6·38	116·42	41·35	73·35	23·95	27·21 *c*

a 9 months; *b* 10 months; *c* 11 months.

The high rate of mortality which occurred at Lucknow in 1864, and which formed the subject of comment in last Annual Report, shows a marked diminution in 1865, having fallen from 44·53 to 27·07 per 1,000.

The stations in which the mortality in 1865 ranged between 30 and 40 per 1,000 are next shown :—

STATEMENT XXX.

	Died per 1,000 of Average Strength.						
	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Barrackpore ...	44·82	25·99	35·93	*b* 16·63	20·50	39·56	39·22
Allahabad ...	105·43	46·34	*a* 47·77	18·97	78·75	25·26	33·56
Delhi ...	27·14	29·87	94·94	28·20	35·65	22·82	36·87
Mooltan ...	*a* 19·42	26·31	17·71	19·69	16·31	11·78	38·06
Meean Meer ...	38·65	21·60	291·17	77·09	*c* 10·27	25·27	32·76
Attock ...	*b* 35·18	*b* 5·92	*c* 16·30	20·51	† ...	13·79	32·05

a 10 months ; *b* 9 months ; *c* 11 months ; † not occupied.

Excepting Barrackpore, where the high mortality of 1865 was fully equalled by that of 1864, the ratio of deaths in each of these stations during the past year far exceeded that of the year previous.

The remaining stations in which the death-rate in 1865 has been so excessive are thus contrasted, as regards each year, since 1859 :—

STATEMENT XXXI.

	Died per 1,000 of Average Strength.						
	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Dum-Dum ...	85·04	39·45	30·0	† ...	*a* 12·35	16·89	*b* 57·18
Benares ...	72·24	73·94	20·35	13·14	42·15	27·75	41·08
Fyzabad ...	55·88	33·21	4·49	5·58	13·98	10·37	57·71
Nagode ...	† ...	97·77	10·00	4·24	14·02	10·10	56·82
Saugor ...	† ...	18·62	9·30	18·03	17·75	22·03	51·22

† Not occupied ; *a* 9 months ; *b* 11 months.

The fluctuations in mortality to which troops quartered at the same stations are subject are remarkable.

Comparison of Regiments.

37. Tables XV—XVIII contain an abstract of the Returns showing the admissions, deaths, and invaliding of each Regiment separately, as well as the causes of admissions into hospital, of deaths in and out of hospital, and of invaliding—a valuable

ERRATUM.

At the foot of page 22 add the words—
"Summary which has not hitherto been furnished in the Statistical Tables. The"

high rates, both of mortality and invaliding in Regiments recently arrived, are remarkable. Of the corps noted as having arrived in Bengal in 1864, the 55th lost 58·70 per 1,000 by death, and 47·57 by invaliding; the 58th lost 55·63 by death, and 42·69 by invaliding; the 1-11 lost 64·44 by death, the heaviest mortality in any Regiment during 1865, and 39·38 invalided. The 5th Lancers lost 39·54 by death, and 26·92 invalided. The only Regiment recently arrived which did not suffer severely was the 2-12th, in one wing of which the mortality was 20·73, and in the other 24·34, the total invaliding for the Regiment having been 45·35. The 36th Regiment, on the other hand, which arrived in 1863, and lost heavily both by death and invaliding in 1864, has enjoyed remarkable health during 1865; throughout the whole year there have been only six deaths, two of which were from consumption, and two in the months of January and February from the same fever which had been so prevalent in the year previous.

Excessive mortality in 1-11th Regiment.

38. The excessive mortality in the 1-11th landed from England in 1864 was due chiefly to cholera, fever, and heat apoplexy. Fifty-four men died during the year; of these, eleven from cholera, seven from fever, and no less than twenty from apoplexy. The excessive mortality is all the more remarkable, because the station of Fyzabad at which the Regiment was quartered has generally proved exceedingly healthy. Of the twenty deaths from heat apoplexy, one occurred on the 20th of May. The dates of the other deaths from this cause were as follows:—

June	3rd	...	...	...	3	deaths.
,,	7th	...	...	...	1	,,
,,	8th	...	...	...	2	,,
,,	10th	...	...	...	1	,,
,,	20th	...	...	...	1	,,
,,	21st	...	...	...	1	,,
,,	22nd	...	...	...	3	,,
,,	23rd	...	...	...	4	,,
,,	24th	...	...	...	2	,,
July	31st	...	...	...	1	,,

With reference to this disease, the Surgeon of the Regiment remarks "that the larger portion of those seized were of a decided intemperate character, and many of them craving drunkards. The exciting cause of this epidemic may be ascribed to the intense heat combined with occult atmospheric influences, for the disease abated on the occurrence of a rain and thunder-storm with change of wind. The pre-disposing causes may be in many intemperance and that period of life between 30 and 40 years of age. Case No. 2 is returned as of 24½ years, but the patient looked older, and he had been much exposed to the influence of the sun, and was brought to the hospital drunk, with impaired nervous vigour, and nervous exhaustion resulting from loss of appetite and sleeplessness. The men were invariably taken ill between 3 P. M. and 9 P. M; the disease insidiously appearing under the symptoms of an attack of pyrexia. At the commencement of the disease the most untoward symptom was absence of respiration together with an intense stinging heat of skin. The Thermometer applied to the skin indicated a temperature of 13° above the surrounding atmosphere. These symptoms varied in duration in different cases from one to six hours, and in those

summary which has not hitherto been furnished in the Statistical Tables. The instances that proved fatal the primary symptoms terminated in a fit, in some cases of a decidedly hysterical character; in others it was simple delirium with incoherent talking and low muttering, sometimes the patient attempting to catch at imaginary objects. In one case the fit was of a violent muscular nature, the patient requiring to be restrained. This fit lasted only for a few minutes, and was succeeded by a comatose state with difficult breathing becoming more and more urgent. From the post mortem appearances, together with the symptoms the disease displayed, it would appear that death was caused by the great congestion of lungs, liver, and brain."

The Artillery quartered at the same station did not suffer. From the various Reports of Committees and other papers available, there can be little doubt that exposure aided by intemperance had much to do with the prevalence of the disease, but the excessive heat of the season acting on the older men of a corps just arrived from England was in itself sufficient in great measure to account for the disease and the great fatality which attended it.

Relation of age to mortality.

39. The relation of age to mortality is a question of great interest and practical importance. The following Statement showing the deaths of 1865 and the ratio per 1,000 of strength at the different ages has been prepared by Dr. Bryden. The returns regarding age represent the numbers composing the army on the 1st January; and hence, as explained in the foot-note, the ratio must be regarded as comparative and not actual:—

STATEMENT XXXII.

Distribution of the Strength of the Army according to age on the 1st January 1865.

Total Strength.	Under 20.	20 to 24.	25 to 29.	30 to 34.	35 to 39.	40 and upwards.
39,722	1453	13,633	16,442	5,755	2,023	416

*Deaths of 1865 and the ratio per 1,000 of Strength at the different Ages.**

Causes of Death.	Deaths of 1865.				Died per 1,000 of Strength above stated.			
	Under 20.	20 to 24.	25 to 29.	30 and upwards.	Under 20.	20 to 24.	25 to 29.	30 and upwards.
Cholera	3	27	59	29	2·07	1·98	3·59	3·51
Fevers	7	47	61	23	4·82	3·45	3·71	2·81
Apoplexy	...	11	53	59	...	·81	3·22	7·20
Delirium Tremens	...	...	6	11	...	...	·36	1·34
Dysentery and Diarrhœa ...	1	21	55	31	·69	1·54	3·34	3·78
Hepatitis	...	16	57	46	...	1 18	3·47	5·61
Phthisis Pulmonalis ...	...	12	27	15	...	·88	1·64	1·83
Heart Diseases	1	1	15	23	·69	·07	·91	2·81
All other causes	...	33	74	77	...	2·42	4·50	9·40
All causes	12	168	407	314	8·27	12·33	24·74	38·32

* The ratio must be regarded as comparative and not actual, since the strength at 1st January exceeded the average for the year by 2,500.

While under 20 years of age the mortality was only 8·27 per 1,000, above 30 it was 38·32, or nearly five times as great. As regards fevers and cholera, the young men enjoyed but little more immunity than the old, but the results as regards apoplexy are striking. No man under 20 died from this affection. Among men above 30, the deaths were 7·20 per 1,000. Under the heads of Delirium Tremens, Dysentery, and Hepatitis, the same marked increase of mortality above 30 is shown. The statistics of the 1-11th strikingly illustrate the same. The following Statement shows the relation of age to mortality from all diseases in this Regiment during 1865 :—

STATEMENT XXXIII.

Age.	Strength.	Deaths.	Ratio of deaths per 1,000.
Below 20	170	1	5·88
20 to 24	409	10	24·45
24 to 30	183	23	124·59
Above 30	77	20	259·74

In the 58th Regiment, if the returns of age be correct, the rate of mortality for all men below 25 was 37·21 per 1,000, and above that age 157·48 per 1,000.

Invaliding.

40. In Table XIII are shown the extent and causes of invaliding during 1865; the particulars as regards each Regiment are given in Tables XV—XVIII. The ratio of 46·87 per 1,000 is unusually high and considerably in excess of the loss under that head in the year previous. Commencing with 1861, the number of men annually invalided has been as follows. The statistics of the years immediately preceding 1861 are exceptional, as the army was then in the field and the numbers rendered unfit for service by wounds and exposure much greater than it otherwise would have been :—

Year.	Invalided per 1,000.
1861	28·1
1862	31·5
1863	35·0
1864	36·8
1865	46·87

During the year 1865, 639 men were invalided for discharge from the service, and 1,097 for change of climate. As was remarked in last Annual Report, the mere increase in the number of invalids does not necessarily indicate an

increase of disease. The greater facilities for conveying men to the port of embarkation, and the greater consideration which has of late years been evinced for the soldier, must be taken into consideration.

The diseases by which invaliding has been occasioned are shown in Table XIII. The results may thus be summarized and compared with those of each year since 1859 :—

STATEMENT XXXIV.

Causes of Invaliding.	Invalided per 1,000 of Strength.						
	1859.	1860.	1861.	1862.	1863.	1864.	1865.
Fevers	1·92	2·54	1·96	1·74	2·01	1·63	1·58
Eye Diseases	1·47	3·31	1·96	1·68	1·81	2·05	1·07
Dysentery	2·01	3·56	2·54	1·46	1·59	1·63	2·91
Diarrhœa	·31	·82					
Rheumatism	3·79	8·22	3·81	5·45	5·47	3·81	5·35
Venereal Diseases ...	·71	1·39	·98	2·28	2·42	2·38	3·20
Phthisis	1·51	2·15	1·56	1·88	2·03	3·32	3·09
Epilepsia	·33	·77	·45	·54	·74	·77	·67
Heart Disease	1·56	2·29	1·49	1·68	1·67	3·00	3·47
Lung Diseases	1·07	1·45	1·34	·93	1·22	1·19	1·45
Hepatitis	3·37	6·50	3·81	4·84	5·18	5·05	6·31
Worn out	1·62	4·03	2·65	4·00	3·72	5·20	8·89
Other causes	1·32	1·11	·80	·67	·61	1·12	·88
Causes not specially calculated	3·81	5·16	4·14	3·61	5·78	4·96	7·00
Mental Diseases ...	...	·79	·60	·74	·72	·64	1·00
Total ...	24·80	44·09	28·09	31·50	34·97	36·75	46·87

Sickness and mortality among women and children.

41. The admissions and deaths among the women and children of European Regiments are detailed in Table XIX. As many of both are under recent orders treated in barracks, the admissions do not fully represent the amount of sickness. Among both women and children the mortality continues lamentably high, having been 42·00 per 1,000 among the former, and 83·15 among the latter. During the four years ending 1853-54, the average annual rate of mortality among soldiers' wives was 44·5 per 1,000. During the four years ending with 1863, it was 49·6 per 1,000. Among the children for the four years ending with 1853-54, the average annual rate of mortality was 84·1 per 1,000 ; for the four years ending 1863, it was 90·4.

42. A Return has been prepared showing the comparative sickness and mortality among married and unmarried British soldiers in certain divisions of the army during 1864. The results are summarized in the accompanying Statement :—

Comparative sickness and mortality among married and unmarried soldiers.

STATEMENT XXXV.

	Unmarried.		Married.	
	Daily Sick per cent. of Strength.	Deaths.	Daily Sick per cent. of Strength.	Deaths.
Rohilcund District	6·55	2·05	3·56	3·71
Saugor „	7·71	2·20	3·90	2·90
Gwalior „	5·12	1·20	1·63	2·51
Peshawur Division	5·32	1·06	1·82	1·59
Lahore „	4·81	1·44	5·35	3·05
Sirhind „	5·67	1·12	1·16	1·15
Meerut „	7·8	1·67	5·85	2·87

From this it will appear that, with one exception, the proportion of daily sick per strength was considerably greater among unmarried than it was among married men, and that in each case the mortality among the latter was in a higher ratio than it was among the former. It seems desirable that these statistics should be permanently recorded, but there can be no question that no deductions of any value can be drawn from them. The number of married men is in most cases so small as to afford an altogether inadequate basis for correct calculations. The amount of sickness among this class is doubtless influenced in great measure by the absence of venereal disease, by their generally more steady habits, and by the positions which many of them hold. Men who are fully able for the comparatively easy duties which devolve on some Non-Commissioned Officers would have been forced into hospital had they been private soldiers. As regards the increased ratio of mortality among married men, one element of great importance ought to be taken into consideration, and that is, that the age of married men must average much higher than that of those who are unmarried. No fair comparison of different classes can be made in which the important data of age are not given.

43. No reliable data distinguishing the comparative health and liability to fatal disease enjoyed by the total abstainers, the temperate and intemperate soldiers, had been preserved at the Head Quarters of Regiments during 1864. It was therefore found impossible to prepare a Return for that year of sufficient accuracy to be of any value, and orders were accordingly issued to ensure records of a trustworthy character for the future. The Returns for 1865 have not yet been completed.

Comparative sickness and mortality among the temperate and intemperate.

43A. The extreme prevalence of an intractable sore among the European troops occupying Delhi led to the appointment of a Special Medical Committee to enquire into the causes of this disease, and to suggest what measures ought to be adopted to check its recurrence. The name of Delhi has long been associated with a peculiar ulcer which has been common among the inhabitants, and which has been known under the name of Arungzebe, having been called after the Emperor who is said to have suffered from it. For generations, it appears, the Natives of Delhi have been in the habit of presenting offerings at a particular shrine in hopes of propitiating the deity and obtaining a cure of this affection; and it is not uncommon for those suffering from the ulcer to visit the ruins of a mosque erected by the Emperor Arungzebe in the vicinity of Muttra, and to rub their sores with one of its bricks in hopes of their being healed. The sore is said to be common also at Muttra, Agra, and Lahore, although it does not prevail in those cities to the same extent as it does in Delhi. Even in Delhi, however, it is only since European troops have been located within the city that the disease has attracted much attention. Since 1857 it has affected no less than from 400 to 700 per 1,000 of the British soldiers during the first year of their residence, and although the disease is not of a fatal character, its prevalence has seriously affected the efficiency of the force. The sore is not usually painful, nor is the health generally affected, but it is of a most tedious character, and as it most frequently attacks the face and hands, it occasions a very great amount of disfigurement. It was suggested that the sore might be of parasitic origin, but a careful microscopic examination failed to discover any thing in support of this idea. As regards the cause of the affection, no very definite conclusion can be arrived at. "It seems highly probable," as the Committee observes, "that the use of Delhi water tends in some way or other to propagate the disease;" but why the Europeans should suffer so much more than the Natives, and why the disease should be prevalent within the city and unknown in the immediate neighbourhood, are points which have not been satisfactorily explained. Some few Medical Officers expressed their belief that the disease was contagious, but the generality of them were of an opposite opinion. The Committee endeavoured to test this important point by inoculation. But although in most instances sores followed the operation, it was doubtful whether they were the true Arungzebe. The circumstance that the exposed parts of the body are those most usually attacked is in favor of the idea that the sore is of a communicable character, and further investigation on this point is desirable. The general conclusions which were come to by the Committee, and their practical recommendations for improving the health of the Garrison at Delhi, and particularly for checking the prevalence of the peculiar ulcer, are now under the consideration of the Government.

Special Report on Delhi Sores.

In connection with this enquiry, an analysis was made of water taken from wells in the city and vicinity of Delhi, from the Jumna and the canals. In only two of the wells examined was the water found to contain less than four grains of organic matter per gallon. In others, which were used for drinking, it amounted to as much as 16 grains. In those the water of which was employed for ablution, for cattle, and for watering roads, it was as high as 65·100 and even 144 grains. This enormous and almost incredible quantity of

organic matter loaded with nitrates led the analyst, Dr. Lackersteen, to suppose that many of the wells were merely receptacles of animal matter in a state of decomposition; of these the water had too foul a smell and too brackish a taste to admit of its being used even by mistake for domestic purposes.

Sanitary Administration of Military Cantonments.

44. The Rules and Regulations which ought to be passed under Section XIX of Act XXII of 1864 have been again carefully considered by the Commission, and, in conjunction with a Special Committee which was appointed for the consideration of this important subject, a fresh Draft has been prepared and submitted to the Government. These Rules propose that, in every Military Cantonment in which the Commander-in-Chief shall so order, a Committee be appointed to be called the Cantonment Committee; that it shall be presided over by the Officer Commanding, and that the Members shall consist of the Sanitary Officer, the Executive Engineer, the Magistrate of the District, and the Cantonment Magistrate who shall also fulfil the duties of Secretary. The Committee is intended to be mainly a consultative body to advise and assist the Officer Commanding the Cantonment in those portions of his duties which are connected with matters that affect the public health, safety, and convenience. The formation of a Cantonment Fund has been recommended; the sources from which it may be formed have been detailed, and also the purposes for which it may be lawfully expended. The manner in which the proceedings of this Committee are to be conducted, and the Reports which are to be furnished to it are described, and the Committee itself called on to furnish a Monthly Statement on the sanitary condition of the cantonment generally for the information of the Officer Commanding the Division or District.

In a separate chapter are enumerated the various offences affecting the public health, safety, and convenience punishable under the proposed rules, and also the penalties for breach of them. With regard to the former, it is sufficient to mention that every case appears to have been provided for, whether arising from a direct violation of the rules, or simply from a want of attention to their provisions. The manner in which the Rules and Regulations are to be enforced has also been explained. The whole question is now under the consideration of the various Local Governments and Administrations.

Prevention of venereal disease.

45. Another question embraced within the provision of the Act of 1864, already alluded to, concerns the measures which ought to be adopted for the prevention of venereal disease. The subject, which is of great and pressing importance, was again considered by the Sanitary Commission along with the Special Committee of which it formed a part, and a Draft of proposed rules has been submitted for the consideration of Government. All essential points have been provided for. It appeared unwise to attempt to prescribe strict and inflexible rules regarding matters on which little or no experience was available, and regarding which there is great difference of opinion. As the Sanitary Commission had previously stated, "what is essential is not that the Government should do every thing which may possibly be useful, but that it should do nothing which will have to be undone again afterwards;" it was, therefore, considered advisable to frame rules of as simple a nature as possible, and to

confine them to the great requirements upon which all authorities are agreed. These are—

1*st*.—The registration of public prostitutes.

2*nd*.—The prohibition of public prostitution by unregistered women.

3*rd*.—The adoption of means for the detection of venereal disease among the registered prostitutes; and

4*th*.—The establishment of Lock-Hospitals for the treatment and detention of women suffering from venereal disease.

The proposed rules contain every thing on these subjects to which it at present appears necessary to give the force of law, and are at the same time framed so as to be as little harassing as possible. Forms of Registers of prostitutes, and of other Schedules which will be required, have been prepared, and the duties of the Medical Officer in charge of the Lock-Hospital, of the Native Doctor, and of the Matron, have also been detailed.

Lock-Hospital Rules in Bengal.

46. With one or two slight modifications, the rules have been approved by the Government, but it has been deemed advisable that the working of them should be left with the Magistrate of the District and the Cantonment Magistrate, and on their exclusive responsibility, the Military Authorities being left to scrutinize any short-coming in their management. The steps which have been adopted in each of the Local Governments and Administrations to carry out these recommendations may be briefly noticed. In Bengal the Commissioners of Divisions have been called on, after consulting the Cantonment Magistrate and the Magistrate of the District in which the Cantonment is situated, to submit a specification of the limits within which it will be necessary to enforce these rules. The principle has been recognized that unless the restrictions are extended to a certain distance outside cantonment limits, they will fail of effect. What this circle of operation should be, local circumstances must in each case decide. On receipt of the reports as to the limits within which the rules should have effect, they will be introduced with regard to the Military Cantonments situated within the jurisdiction of the Government of Bengal.

Lock-Hospital Rules in the North-Western Provinces.

47. Under orders dated the 22nd March 1866, the rules, as modified by the Government of India, have been introduced within the North-Western Provinces, and certain additional rules prepared by a Committee which assembled at Nynee Tal have been added. These additions refer mainly to the better control of houses of ill-fame. They require that a Register of all such places shall be kept, and provide that any person keeping such a house and failing to register it shall be liable to penalty. Every person keeping a house of ill-fame is not only held responsible for the good order of the place, its inmates, and of those who frequent it, but is liable to penalty if he knowingly permits a prostitute to exercise her calling when diseased or without her ticket.

Lock-Hospital Rules in the Punjab.

48. In the Punjab the rules have not yet become law. The question has been carefully considered by the Government, and orders will doubtless be issued shortly. Some interesting particulars have been received regarding

the measures which have for some time been adopted in the city of Delhi to check the spread of venereal disease. Being cantoned within the walls of the city, the European troops are exposed to special temptation, while at the same time the number of prostitutes to be controlled is unusually large. A Lock-Hospital, supported entirely by Municipal Funds, has been in existence for two years, and its operation has been attended with excellent results. The number of prostitutes residing in the city of Lahore is estimated at 8,000. Beyond registration of the houses, no means have yet been taken for supervising this large and dangerous class.

Measures adopted in the Central Provinces.

49. In the Central Provinces, pending the enactment of rules for the establishment of Lock-Hospitals, means have been for some time adopted to check the prevalence of venereal disease, and with the best effect. A very evident decrease in disease of this description is reported to have taken place among the European Troops. The fuller measures introduced into the rules recommended by the Special Committee have since been adopted as regards all places within the Cantonments of Jubbulpore and Saugor, and a distance of four miles from their boundary lines.

Lock-Hospital Rules in Oude.

50. The same rules have also been put in force as regards all Military Stations in the Province of Oude. Generally they are extended to all places within a distance of four miles from the cantonment boundary. As regards Lucknow, they include the neighbouring city. "The Cantonment Magistrate will be responsible for carrying out the rules within the limits of the cantonment subject to such general control as the Commissioner of the Division and the Magistrate of the District may think fit to exercise. Subject to the same condition, the execution of the rules within the jurisdiction of the City Magistrate will rest with that Officer, and breaches of the rules will be cognizable by him and by the Magistrate of the District when committed outside the cantonment boundaries."

The good effects which may be anticipated from the general adoption of such measures can hardly be over-estimated in a sanitary point of view. As Mr. Strachey remarks: "there is no insurmountable difficulty in bringing about an almost complete cessation of these formidable diseases. If this object can be obtained, the result will be one of the highest importance, not only to the army, but to the nation. The Chief Commissioner considers that the object with which these measures are undertaken is second in importance to no object that can be named."

Hill Sanitaria.

51. It has been decided that three and a half Regiments of Infantry and one Garrison Battery of Artillery shall in future be located in the Hills. Dugshaie, Subathoo, and Pokree will each have a full Regiment of Infantry, while at Darjeeling there will be half a Regiment of Infantry and a Garrison Battery of Artillery. For the accommodation of convalescent soldiers, there are now five depôts in the Hills, viz., Darjeeling, Nynee Tal, Landour, Kussowlie, and Murree, besides a small depôt at Dhurmsalah. A sixth depôt has also been ordered for Dalhousie, and it is proposed to place a small depôt at Jutogh. The Parisnauth Hill in Ben-

gal has been experimentally tried for a small detachment of sick soldiers. Nearly all of them increased in weight and improved very much in appearance during their stay there. Although the experiment has been on too small a scale to admit of any definite conclusions being formed as to the climate of Parisnauth, the results so far have been favorable. This place can never vie with the mountain stations of the Himalayas, but it may prove of the greatest advantage from being situated in the unhealthy provinces of Bengal, and within easy access to weak and sickly men who might not be able to bear the longer journey.

Barracks for Hill Stations.

52. Specimen plans of barracks for Hill Stations have lately been prepared. In accordance with the opinion of the Home Sanitary Commission, it has been determined that there is no sanitary objection in the Hills to the occupation of the lower as well as of the upper floor as dormitories, the lower story being well raised and provided with ventilation below wherever the foundation of the barracks cannot otherwise be thoroughly well protected from damp. Windows, which have not been considered applicable to barracks in the plains, will be used in the Hills in addition to doors, the proportion which the Sanitary Commission recommended being four of the former to two of the latter. In each room there will be at least one fire-place. Sites on the summit level of the ground will, as a rule, be preferred, and wherever circumstances will not admit of such a site being used, the part of the slope on which the barrack is placed will be cut so that no part of the barrack room shall be nearer the slope than 20 or 30 feet. Barracks in the Hills, especially such as are intended for winter occupation, will have a southern exposure wherever practicable.

Conservancy of Hill Stations.

53. In connection with the very unsatisfactory condition of Simla, the whole question of the proper means to be adopted for the conservancy of Hill Stations was considered and reported on. There can be little doubt that arrangements for securing the proper sanitary condition of such sanitaria have been hitherto much neglected, and it may be questioned whether the affections of the bowels which have been considered as endemic in the Himalaya may not in some measure be due to the contamination of the water-supply. That the water was contaminated in the foulest manner possible was a fact admitting of proof only too clear. The dry beds of the mountain torrents were used as places of convenience to have their contents swept down by the rain. In many places the spring from which drinking water was obtained lay beneath the brow of a hill which was frequented for the purposes of nature by the servants of the neighbouring houses. It was shown, moreover, that sheep were allowed to feed on the hill sides on food too disgusting to be mentioned. How these revolting practices could be put a stop to was pointed out by the Commission. The provision of latrines, both public and private, the guarding of the purity of the water-supply, and the necessity for generally improved sanitary administration were insisted on.

There was too much reason to believe that other Hill Stations were in no respect better managed than Simla, and that a decided reform in the arrangements regarding the public health was urgently called for in them all. The Commission's Report on Simla was accordingly circulated for the information of

the authorities in other Hill Stations, and the general principles it embraced were recommended for adoption.

Details of Barrack accommodation.

54. No change has been made in the general principles which ought to be followed in the construction of barracks for European troops. In the barracks intended for the reception of Regiments of Cavalry and Infantry, it has, however, been determined that instead of 20 men in each room there shall be only 18; some increase has also been made to the quarters provided for non-commissioned officers, and the school-mistresses attached to Artillery Divisions may now be allowed quarters, according to Class A, either in a separate building or attached to the school-room.

Ventilation and Cooling of Barracks.

55. In the last Annual Report it was stated that a Committee of experienced officers had been appointed at Roorkee to experimentalize and report on the whole subject of the ventilation and cooling of barracks. In their preliminary report which has been issued, the difficulties attendant on the problem to be solved have been pointed out. It has been shown that in India ventilation by natural means must frequently be altogether inoperative; that there are times, especially on calm and sultry days in the rains, when even with every door and window open, little or no change will take place between the air within a barrack and the atmosphere without. The necessity of some mechanism for carrying out artificial ventilation is therefore apparent, and the whole question thus resolves itself into devising the most simple and convenient means for obtaining within the building an artificial supply of fresh air cooled to the desired temperature, and for affording exit to the foul air to be discharged. A series of experiments has accordingly been undertaken with a view to determine the best mechanical means for carrying out artificial ventilation—means that shall combine economy with simplicity and that shall be on a plan not easily deranged, or, if deranged, admitting of speedy re-adjustment, and such that the temporary derangement shall not interfere with the ventilation. In addition to testing various mechanical apparatus, it was also resolved to determine various collateral points of importance—how with a sufficiently powerful machine the current of air can be rendered insensible as a draught on the inmates, the effect of cool fresh air when driven in at different heights, the position of the foul or expired air in a room, and the effect of foul air outlets at different positions and at different temperatures, the best height at which the air should be obtained, and the most convenient and best way of cooling it. It was further resolved to test by experiment the best size and form of punkah, the best length and time of its swing, the best means of hanging and connecting them, as well as the best means for keeping them in motion. On these important points experiments are still being carried on. No definite conclusions have yet been arrived at, but it is believed that a machine on the principle of Dr. Arnott's gasometer pump will be found to be the best capable of accurately and efficiently driving the amount of air required, and the fact that air of different densities has different capacities for heat will in all probability be turned to account in obtaining the desired temperature of the air thus propelled. From experiments made at Roorkee, the Committee has concluded that the foul or vitiated air does not lodge at any particular

level, but it is believed that it will be found most convenient that the pure air should be driven in near the top of the room and the foul air taken out from the lower portion. A full scheme embodying the results of their conclusions will be submitted with as little delay as possible.

Lighting of Barracks.

56. Circumstances have interfered with the experiment for lighting barracks with gas which it was proposed to make at Dinapore, but the subject has not been lost sight of, and the use of gas manufactured both from oil and also from coal will shortly be tried, and the comparative efficiency and economy of the two compared. Orders have also been issued with a view to test the capabilities of kerosine oil as a means of lighting barracks.

Construction of Hospitals for European Troops.

57. Important suggestions for increasing the efficiency of hospital administration and management, which will presently be referred to, are under the consideration of the Government. The principles on which hospitals for European troops are to be constructed having been decided on, first demand notice. After a very careful comparison and consideration of the valuable opinions that have been recorded upon this important subject, taking the proposals in the order in which they have been treated in Colonel Crommelin's excellent Memoranda, the following conclusions have been adopted with regard to them. It has been resolved :—

1*st*.—That, as a rule, separate hospitals must continue to be provided for every Regiment or Detachment, and that a General Hospital is not, unless under exceptional circumstances, required in time of peace. In Bengal, the only General Hospital contemplated for ordinary use will be at the Presidency, and the conversion of the building at present occupied by the High Court into a General Military Hospital only awaits the removal of the High Court to the buildings which are being erected for its reception.

2*nd*.—After a careful examination of the Hospital Returns for the last few years, the Government is of opinion that it will suffice to provide hospital accommodation at the generality of stations at 10 per cent. on full regulation strength for Regiments, and for Detachments exceeding 400 men, and at 12 per cent. for detachments under that strength. At the stations of Morar, Saugor, Delhi, Agra, and Peshawur, in consequence of the larger proportion of sick, it has been considered advisable to increase the allowance to 12 per cent. in the case of Regiments and Detachments over 400 in strength, and to 15 per cent. for Detachments under that number. The extent of accommodation for women has not yet been determined.

3*rd*.—All Regimental or Detachment hospitals which may hereafter be constructed in the plains of India, shall be double-storied buildings, in which the wards for the sick shall be in the upper floors, and the day room and administrative offices, &c., &c., in the lower stories. "Looking, however, to the great expense that is involved in the future provision of hospital accommodation throughout India, to the excess of space for auxiliary purposes in the lower floors that will be the consequence of the construction of buildings unnecessarily large, to the fact that the proportion of sick only exceeds 7 and

8 per cent. of strength for a brief period during each year, and, lastly, to the positive advantage there may be in having accommodation in the lower floor for a small number of certain classes of patients, the Government of India considers that it is not necessary to provide accommodation in the upper floor for more than three-fourths of the total complement of patients, the remaining one-fourth being arranged for in well raised and well ventilated lower floors."

4*th*.—In the hills, a larger proportion than one-fourth of the total complement of patients may be provided for in the lower floors, should this arrangement prove convenient. As a rule, however, the same description of hospital will be provided in the hills as in the plains.

5*th*.—That buildings of more than two stories are not as a rule admissible.

6*th*.—That the sub-division of a hospital into a number of very small buildings is objectionable on sanitary, administrative, and financial grounds.

7*th*.—That 50 or 60 sick can be placed in one building without any risk, provided it has not a continuous roof, and that it be divided into sections, each of which shall, as far as possible, have an independent ventilation.

8*th*.—That for a Regiment of Infantry, two buildings shall be provided for the men, and one for the women and children; for a Regiment of Cavalry, one for the men and another for the women and children; for one or two Batteries of Artillery, a single building for all, a separate hospital, however, being provided for the women whenever the number of female patients amounts to 10 or upwards.

9*th*.—Every Military Hospital shall consist of—

1. Wards for the sick and convalescents.
2. Ward-offices, *viz*., Superintendent's rooms, sculleries, privies, and urinaries, bath and ablution rooms.
3. Day-rooms for sick and convalescents.
4. Quarters for medical subordinates.
5. Ditto for hospital sergeant.
6. Ditto for hospital orderlies.
7. Store-rooms.
8. Surgery and dispensary in one.
9. Receiving-room.
10. Out-door kitchen.
11. Out-door lavatory with shower bath.
12. Out-door privy.
13. Guard-room.
14. Shed for ambulance, carts, hearse, &c.
15. Dead-house.
16. Enclosure-wall or railing.
17. Houses for native establishment.
18. Laundry.
19. A small detached building for contagious diseases.

10*th*.—Under this proposal the number of wards is laid down, it being admitted that the same objections which apply to a multiplicity of buildings apply to a multiplicity of wards. For an Infantry hospital, five large and two small wards for the men are considered sufficient. For a Cavalry hospital, three large and two small wards for the men, and one large and one small for the women. For each Battery of Artillery, two large and one small ward for the men and one for the women.

11*th*.—As regards provision for contagious diseases, it has been resolved that for each hospital of Cavalry or Infantry, it will be sufficient to provide a well raised single storied building to contain two small wards; for smaller hospitals, no detached building for special diseases appears necessary.

12*th*.—Under the 12th proposal, the number of beds to be contained in the various wards has been determined.

13*th*.—As a rule it has been resolved that the beds shall be arranged on the opposite sides of the room between the doors; that not more than two beds be placed in the wall space between two doors on the same side of the ward, or between the opposite doors of the ward; and that there be not less than half as many doors in the length of the ward as there are beds. In the hills both doors and windows may be resorted to, the proportion of each being regulated by the conditions of climate.

14*th*.—In the main wards in the plains, each bed will have ten running feet of wall space, the ward will be 24 feet wide and 20 feet high, thus giving 120 superficial feet and 2,400 cubic feet to each patient. In the hills the wall space will be 8½ feet, the width of ward 24 feet, and the height 16 to 18 feet, these giving per bed 102 superficial, and from 1,632 to 1,836 cubic feet. In the small wards the superficial space will average from 150 to 180 feet.

15*th*.—An Attendant's room and a scullery will be attached to every large ward.

16*th*.—A lavatory and privy will also be attached to every large ward, but cut off from it by a separately ventilated passage.

17*th*.—For the use of the patients in the smaller wards, one or two small privies and lavatories will be provided.

18*th*.—Day-rooms will be provided for the sick and convalescents where the space in the lower floors will admit of it. After providing for all other auxiliary purposes, separate apartments will be provided in the larger hospitals for messing and recreation, should there be space for the purpose.

19*th*.—The Day-rooms, quarters for medical subordinates, for hospital sergeant and orderlies, also the store-rooms, surgery and receiving-room will occupy the lower floor.

20*th*.—The hospital kitchen, a general privy and lavatory with a guard room, &c., will occupy out-buildings.

21*st*.—The hospital enclosure wall will either be of brick from $2\frac{1}{2}$ to 3 feet high, or an iron railing $4\frac{1}{2}$ feet high. When the boundary is within 100 feet of the hospital, a railing is always to be adopted.

The subject is one of so much importance that it has been thought advisable to detail the conclusions which have been arrived at.

Hospital Equipment.

58. A report on the whole subject of hospital equipment having been called for, a scale of equipment which appears to be suited to the requirements of the country has been submitted. The scale of equipment of hospitals in England and in the Colonies has been adopted as the standard, leaving out such articles as appear to be unnecessary, and adding such as seem to be required. The addition of the articles proposed will, it is believed, add much to the efficiency of hospitals and the comfort of the sick. Much of the difficulty which has hitherto been experienced in dealing with this question has arisen from the frequent moving of Regiments and the extra expense involved in carrying more than was absolutely necessary. But it is intended that the proposed equipment should be stationary under the charge of some responsible person, and be handed over from Regiment to Regiment in the same way as the hospital building.

Hospital cooking and attendants.

59. In connection with this report, two memoranda by Dr. Gordon, one of the Members of the late Sanitary Commission, have been submitted for the consideration of the Government; the first on the dieting of the sick, and the other on hospital attendants. The advisability of having efficient cooks at the head of hospital kitchens and of affording the best means for preparing what will meet the tastes, and it may be, the caprices of the sick, need not be insisted on; no less advisable is it to provide trained attendants for waiting on the sick. The manner in which the recommendations of the Royal Commission on these important matters can best be carried out has been discussed by Dr. Gordon. He proposes that trained Europeans be employed in all hospitals, the Native Establishment acting merely as assistants. "There can be no difficulty," he writes, "in obtaining in every Regiment a soldier who understands cooking to an extent at all events equal to the knowledge possessed by the natives hitherto employed, and such a man would willingly take the situation for a small sum monthly added to the privilege so much envied by the soldier of having every night in bed. He would speedily learn whatever was at first wanting." In order that the sick may obtain the advantages of trained attendants, Dr. Gordon observes that "two courses are open, neither of which present any special difficulty as to execution.

"The first is that trained orderlies of the Army Hospital Corps be sent to India from England in the proportion in which these attendants are provided at home, with one man in addition per Regiment to supply the requirements and probable casualties in this country; that Regiments embarking for India bring their trained orderlies with them as they do when embarking for any other foreign station, and a proportion of these be sent out from time to

time to fill up probable vacancies. These men, although not absolutely belonging to Regiments, could readily be paid by Regimental Pay Masters or by officers commanding depôts precisely as non-commissioned officers of the Corps of Armourers now are. They would be under Regimental discipline, and Surgeons held responsible as elsewhere that they are kept up in efficiency in accordance with the instructions published on the subject under authority of the War Office.

"The second plan to be proposed is that a Corps of the description alluded to be raised for service in this country. It would be recruited in part by men who are already soldiers, partly by men of known good character, who might desire and be found fit to enlist into it, the one proviso in regard to them being that they shall be natives of England, Ireland or Scotland. It would, as a matter of course, be right that liberal terms be given to them, that every inducement for good behaviour and faithful service be held out, but that neglect of duty or indifference in its performance be severely punished. The organization of the Corps and payment of the men until attached to Regiments ought to be in the hands of an officer especially selected for these duties, and it would be his duty to see that records of the men's services be kept in a complete state in a similar manner to documents of soldiers of the same kind. These men would have, in the first instance, to be regularly trained for their duties, and, being so, would be sent to Regiments throughout the country, medical officers being held responsible that they should be regularly practised in their particular duties while serving under them. With regard to the original training of these men, it is necessary to observe that it is taken for granted, Government will carry out the proposal which has indeed been so far sanctioned that the building at Calcutta hitherto occupied by the Sudder Court shall be given over for the purpose of conversion into a General Military Hospital. This measure being carried into effect, there appears no good reason why the establishment to be formed should not serve for this country some of the purposes that Netley does for the service generally, one of the respects in which it does so being as a school where men shall receive sufficient training to render them fit for attending upon our sick soldiers. Not only orderlies but all other classes of hospital attendants would there be taught their respective duties, and having undergone their course of probation, would be drafted to Regiments requiring their services."

Cots for European Troops.

60. Early in the year the Commission expressed an opinion that the cots supplied to the troops in barracks are generally very bad, and that it is essential for their health and comfort that iron cots should be provided. The question of what description of iron cot should be adopted has frequently engaged attention, and several varieties have been examined and reported on. The Inspector General of Ordnance has been instructed to have 150 of each of the undermentioned description of cots made up for the purpose of being tried at different stations; (1) Iron Trestle Cot with planks; (2) Iron Cot of Colonel Broome's pattern; and (3) a Cot of Iron frame with canvas sacking. The first is the cot which was recommended by His Excellency the late Commander-in-Chief, Sir Hugh Rose. It possesses many advantages, and with some slight modifications which were suggested by the Commission, it will form an admir-

able bed for soldiers. It can be kept entirely free from vermin, and is so portable that it can be readily moved—an advantage of no small importance, especially in the event of a move into camp on the appearance of cholera, when it is very advisable that the men should have their beds with them. Colonel Broome's cot is entirely of iron, while the third variety is described as the same as the beds issued to the troops at Shorncliffe. As soon as the required number have been made up, their comparative merits will be practically tested, and a conclusion arrived at on the question as to what description of bed is best suited to the British soldier in India.

Bedding.

61. At the suggestion of the Commissary General, experiments have also been undertaken with the view of determining what material to be had in the local markets is best adapted for stuffing soldiers' paillasses and bolsters. The recommendations of the Commission on the subject of soldiers' bedding have been approved by the Government, and the introduction of the proposed changes only awaits a decision on the material for stuffing these articles which ought to be employed. Reports have been received from Committees which assembled at several of the principal stations to give an opinion on the results of the experiments which have been instituted. Different views have been expressed by different Committees and by individual officers who have reported on the subject. In some instances the stuffing appears not to have received a fair trial in consequence of the unsuitable nature of the cot on which the mattrass was used. It has now been determined to test different materials with the new cots, and for each of the Regiments at Rawul Pindee and Dugshaie where these beds are to be tried, the Commissary General has issued instructions to have 50 paillasses and bolsters prepared, and a proportion stuffed with the following materials :—

1. Country cotton.
2. Hemp, 1st quality.
3. Ditto, 2nd „
4. Straw, wheat or barley.
5. Dry leaves, sugarcane or *kurba*.
6. Coir.

The best description of bedding can thus be determined on at the same time as the best description of cot.

Scheme for recording Meteorological Observations.

62. The imperfect nature of the Meteorological Observations hitherto taken in India and the importance of having trustworthy records of such phenomena were insisted on in last Annual Report. The intimate relation which subsists between climatic influence and the prevalence of disease was also pointed out. A scheme for conducting and recording meteorological observations has been submitted to the Government during the past year. It was shown that, although such observations of various kinds are taken in all parts of India, they are for the most part very imperfect and untrustworthy. Nothing more strikingly illustrates the truth of this statement than the facts mentioned by the Cholera Commission of 1861. It was found impossible "to discover with

any certainty a matter so simple as the direction of the wind when cholera first appeared at Allahabad. One of the medical officers reports distinctly that when cholera broke out at the Jumna Bridge, the prevailing wind was a little south of east, and the fact is noticed as one of particular interest in explanation of the greater mortality on the north side of the river. Another medical officer states with equal precision that the wind was blowing steadily from the west before, during, and for some time after, the outbreak. A third medical officer speaks of the intimate relation that existed between the meteorological phenomena and the fluctuations of the disease—'as long as the deadly west wind prevailed, cholera held its fatal grasp. If the east wind blew for a few days, there was a marked decrease in the epidemic.'" In the same manner it was found impossible to ascertain the range of temperature at Mecan Meer on the 21st August 1861, the day on which cholera reached its terrible climax among the troops of that station. "In one return the highest temperature of the air is stated to have been 84°. In another it was stated to have been 97°. According to the returns furnished by one officer, heavy rain fell on the 22nd and 23rd of August, while, according to another return, there was no rain on those days at all." These examples have often been cited to show how altogether valueless are the hospital registers of even the simplest meteorology; but there was no reason to suppose that they were merely exceptional or accidental cases, or that the records have latterly been more trustworthy than they were in 1861. It was shown by the Commission that with a little supervision, this class of observations might be made really valuable. In addition to them, there are the Registers which have been kept up at Roorkee, Nynee Tal, Agra, Benares, Beaur, and Jhansi, in the North-Western Provinces, where since 1862 the barometric pressure, temperature, humidity, rain-fall, and amount of ozone have been recorded, and the results pulished in the Gazette. In addition it was pointed out that much valuable information might be obtained from the rain returns kept at Revenue and Police stations all over the country. These returns Colonel Strachey had carefully tested, and was satisfied that, although far from accurate, they illustrated general facts of great importance, and that with proper supervision they might be greatly improved. "Although it would doubtless," observed the Commission, "be more satisfactory, looking at the question from a scientific point of view to see good observations which would give thoroughly trustworthy results established by the Government in various parts of the country, we feel that it would be useless now to recommend anything of the sort. It must, under present circumstances, be assumed that no large expenditure of money will be sanctioned by the Government for these objects, and that we must be content with a scheme which shall endeavour to turn to useful account at a small expense the sources of information which already exist. We believe with Colonel Strachey that it is quite possible in this manner to obtain results of great value. We think the chief object at the present time is to make a commencement towards the establishment of a system which may gradually be developed into something really satisfactory." Basing their recommendations on these grounds, the Commission suggested that the Professor of Natural Science in the Thomason College at Roorkee should be appointed meteorological reporter for the North-Western Provinces and that he should be directed to carry out the scheme proposed by Colonel Strachey; that he should receive the meteorological returns from all hospitals,

jails, and dispensaries, as well as the rain returns hitherto submitted only to the revenue authorities; that he should make himself thoroughly acquainted with all the existing sources of information, and endeavour to improve and utilize them to the utmost; and that he should submit an Annual Report embodying and arranging with abstracts and maps the results of the whole observations taken in the Provinces throughout the year. It was further suggested that a similar scheme be carried out in the Punjab. These recommendations and proposals have been approved by the Government of India; a meteorological reporter has been appointed for the North-Western Provinces and another for the Punjab, and both these gentlemen have commenced their labours.

Meteorological Observations in Bengal.

63. The disastrous effects of the cyclone which swept over Calcutta in October 1864, and caused much damage to the shipping and to the country inundated by the storm wave, directed the attention of the Government to the urgent necessity which existed for establishing meteorological observations at convenient stations in the Bay of Bengal and in the vicinity of Calcutta, so that warning might be given of the approach of such hurricanes. A Committee, which was appointed by His Honor the Lieutenant-Governor to consider the question of what practical measures ought to be adopted for this important end, recommended that a meteorological observing station should be established at Saugor Island as early as practicable, as a first step towards the formation of a more extended system. Observations taken there twice daily, they proposed, should be telegraphed, in accordance with Admiral Fitzroy's system, to the Surveyor General's Office in Calcutta. Being there reduced immediately on receipt, they would be transmitted, together with those made synchronously at the Calcutta Observatory, to one of the members of the Committee living in the immediate neighbourhood, and the results published for general information. The Committee further recommended that an observing station should also be established at Port Blair in the Andaman Islands, at False Point, and also on board the *light ships* stationed at the Pilots' Ridge and the Eastern Channel. The establishment of an observing station at Port Blair has not yet been carried out; but two telegrams of the state of the weather have been received daily from Saugor Island since the 28th August, and since the 18th September, a daily telegram has been received from Kandy, containing meteorological reports for the two daily hours of maximum and minimum. Meteorological stations have also now been sanctioned at Chittagong, Cuttack, and Akyab. Although these measures have been undertaken with the immediate view of becoming acquainted with the approach of storms and of giving timely warning with a view to the saving both of life and property, the records of the observations taken will form a valuable addition to the meteorology of India.

Analysis of drinking water.

64. The analysis of drinking water continued to engage much of the attention of the Commission, and a scheme for analysing the water of wells in all military cantonments has been submitted for the consideration of the Government. In coming to any conclusions on this important subject, considerable practical

difficulties were encountered. On many points the chemists who were consulted expressed opinions not only conflicting, but diametrically opposite. The procedure recommended by one chemist for the detection of any particular ingredient has been declared in more than one instance by another to be altogether valueless. Even as regards the preliminary enquiry whether the analysis should be conducted in the chemist's own laboratory, the water to be analysed being brought in bottles for the purpose, or whether it should be conducted on the spot, opposite opinions have been expressed. Some have maintained that, in adopting the first method, no appreciable changes could occur in the water, while all the expense of travelling, and all the risk of breakage of apparatus, would be avoided, and the advantages of the convenient appliances of a laboratory, and of the material assistance so afforded, would be gained. Some, on the other hand, have declared that material changes in the water would be apt to occur during transmission, and that the results of the analysis would thereby be altogether vitiated. On this point, however, the Commission had no difficulty in arriving at a decided conclusion. To be complete, the examination must be microscopical as well as analytical, and to ensure any reliable results from the former, the water must be fresh. The object of the enquiry, moreover, is purely practical. It will not be sufficient to ascertain that the water supply of any particular station is impure; it will be essentially necessary in such a case to endeavour to discover the cause and suggest a remedy. To be of any practical value, such an enquiry must, therefore, be conducted on the spot. This point was particularly insisted on by the Commission. "In conducting their operations," says the report, "the analysts should be instructed to bear in mind that the enquiry is entirely of a practical character, the object being to secure, if possible, a supply of good drinking water. Two reports ought, therefore, to be submitted by each enquirer; one a purely chemical report, recording in a prescribed and uniform manner the results of the analysis, and showing clearly the quantity of each ingredient. The other to be of a general and practical nature, giving the date of the examination, the state of the weather at the time, the elevation of the station, depth of water from the surface, depth of water in the well, proximity or otherwise to rivers or canals, the nature of the soil, the sources of water supply, both to the troops and the native community, the alterations in the nature and amount of supply at various stations, the opinion of the European community, and especially of the old native residents as to the wholesomeness of the water; and lastly the prevalence of diseases, such as boils, cutaneous eruptions, bowel complaints, fever, spleen, &c., &c., among the population, both European and native, and particularly the liability of new comers to be attacked by these ailments." The particular mode of analysis to be adopted was drawn up by Dr. Macnamara, the chemical examiner, to whom all the papers and opinions received by the Commission were forwarded. A more simple scheme of analysis has since been devised by Dr. Macnamara, and several medical officers are now being instructed by him in its practical working. A uniform mode of procedure will thus be ensured. The analysts having received sufficient instruction will be able, it is hoped, to examine the water of seven or eight stations once or twice a year, and at any other times when such further examination appears to be desirable.

In addition to this general scheme for analysing the water of military stations from which, it is hoped, that some valuable practical results will soon be obtained, analyses of water in various parts of the country have been carried on during the past year. Although they generally labor under the disadvantage that the investigation was not conducted on the spot, the results are interesting. The facts connected with the water of Delhi and of some other large cities in the Punjab have been already alluded to in connection with the subject of Delhi boils.

Supply of ærated drinks to European Troops.

65. Measures have been taken, with a view to encourage the establishment of machines, for the manufacture of ærated drinks in Regimental workshops, and it is hoped that in this way the luxury of a cheap wholesome and refreshing beverage will soon be extended to the British troops generally. The experiment which seems first to have been tried in the 7th Dragoon Guards has been most successful, and is reported to have proved "a great luxury and saving to the whole Regiment." Several other Corps have availed themselves of the assistance in the purchase of soda-water machines which has been offered by the Government.

Dry-Earth Conservancy.

66. Having been called on to give an opinion as to the advisability of introducing the dry-earth system of conservancy into British Regiments, and, if approved, to suggest in detail the manner in which it could best be carried out, the Commission submitted a full report on the subject. From all the experience which had been gained of its action in jails and other places in which the experiment had been tried, there could be no doubt of the extraordinary efficacy of dry-earth as a deodorizer, nor could it be questioned that, as regards at least the requirements of this country, the system had proved superior in efficiency to any other that had been tried. In the plan previously adopted, however excellent and however great an improvement on any that had gone before it, no deodorizer had been employed. The efficient working of the system depended on the immediate removal of all evacuations and their reception in an air-tight vessel. It seemed very desirable that earth should be used, but certain difficulties had been urged against its introduction. The chief of these, and indeed the only one of any weight, was that the addition of earth would so increase the mass of the sewage that a large increase to present establishments would be requisite. As regards the urinals, this is a difficulty which must be admitted; but as regards the latrines, it was conclusively shown in the Commission's report that the weight of earth which it would be necessary to add would not exceed, if indeed it equalled, the weight of water hitherto employed; that the use of water would be abolished when dry-earth was introduced, and that as regards the latrines, therefore, there was practically no difficulty to be encountered; no extra carriage would be required, nor would any extra expense be entailed. The Commission, therefore, strongly recommended that the dry-earth system of conservancy should be carried out without delay in all the latrines of British Regiments, leaving its adoption in urinaries for further trial and consideration. Its strict application to latrines was deemed to be a point of the greatest importance. "Comparing the two systems, the dry-earth system and that hitherto employed," observes the

Commission, " the question is simply this—are we to lay aside an agent which, on all hands, is admitted to be a perfect deodorizer, and are we with our eyes open to employ another agent (water) which actually encourages the evolution of deleterious gases? If we disregard the simple and perfect means placed at our disposal, and which can be adopted at trifling expense, who can tell how much sickness may thereby be occasioned? The question is a most mementous one. Even if there be any doubt in the matter, would it not be well to err on the safe side?"

These conclusions were approved of by the Government, and it was determined that the recommendations of the Commission should be carried out; but as many practical difficulties would certainly arise in the application of the dry-earth system in British Regiments, it seemed expedient to adopt it at two or three stations in the first instance, and to await the result of the experiment before extending it generally. Rawul Pindee, Lucknow, Dinapore, and Dum-Dum were suggested as stations where, under different conditions of climate and soil, the experiment would receive an extended trial.

Conservancy Carts and Receptacles.

67. In connection with this subject, the whole question of cantonment conservancy carts and receptacles for the removal of sewage and of all description of filth was considered by the Commission; but as the question was intimately associated with the system of conservancy to be adopted, it appeared advisable that the recommendations should be practically tried for some months and at different seasons of the year at those stations which had been selected for trying the operation of the dry-earth system. The results of these experimental operations have not yet been communicated.

MacDougall's Disinfectant.

68. A quantity of MacDougall's powder has been received from England, and experiments are now being tried to test its efficacy as a disinfectant, the mode in which it can best be applied, the quantity which is requisite for ordinary operations, and the expense which its use would entail. On the best means of determining these points, recommendations were furnished by the Commission, and the results of the experiments will, it is hoped, soon be known. They are being conducted in different parts of the country to prove the adaptability of the disinfectant to different climates and under varying circumstances. It is being tried in jails in Bengal and in the North-Western Provinces, in the General Hospital of Calcutta, and in the Hospital of the Medical College, in the latrines of an Infantry Regiment, in the stables of a Cavalry Regiment, and in slaughter-houses. The trial will thus be extended and complete.

Soldiers' Gardens.

69. The Garden Fund Committee Reports from the several Regiments and Detachments in the Bengal Presidency for the year ending 30th April 1865 show that in many instances the working of the soldiers' gardens has been very satisfactory. "The 1st Battalion of the 7th Regiment at Ferozepore has been the most successful.

During the hot weather the men of the Battalion were supplied with fruit and vegetables at a very low price, and the Commissariat took vegetables monthly to the average value of Rs. 192. The Garden Fund after paying for extensive repairs to Regimental institutions, as the theatre, bowling alley, and gymnasium, shows a balance credit of Rs. 598-6-2. The Company Gardens of the 77th Regiment at Bareilly deserve especial praise; no less than 170 men were working at one time, and great interest appears to be taken by this Regiment in its gardens." It has been suggested that all future reports should state particularly the number of men who occupy their leisure in gardening, and also what effect this occupation of their spare hours appears to have on their health and character, and this additional information has accordingly been called for.

Regimental Workshops.

70. In a recent General Order by His Excellency the Commander-in-Chief, a general statement is given of the accounts of the Regimental workshops in this Presidency for the year 1865 —

"The results attained are, in His Excellency's opinion, very satisfactory, more especially in the 7th Dragoon Guards, 7th Hussars, the 7th, 19th, 34th, 42nd, 79th, 91st, and 101st Regiments of Foot, and the 2nd Battalion Rifle Brigade.

"Although there is a decrease of six in the number of Corps reported on (in consequence of embarkations for England), and a proportionate diminution in the number of tradesmen, yet His Excellency observes with pleasure that the amount realized for work done is increased by more than Rs. 7,500; the extended usefulness of the institutions, and their continued success, having been thus demonstrated."

Employment of Soldiers in Public Works.

71. The experiment of employing soldiers to white-wash their own barracks and to execute other repairs has been continued with some success. In many instances the work has been very well done, and much more rapidly than if it had been executed by ordinary native labor. The men of several Regiments have expressed themselves anxious in future to have such employment, and it has accordingly been determined that the experiment shall have a further and more extensive trial.

The construction and improvement of the road in the Himalaya between the stations of Murree and Abbottabad have been continued by a party of the 79th Highlanders. From the 21st May to the 21st October 1865, upwards of 600 of the men of this Regiment were employed on this work. The financial result at first sight appears to be unsatisfactory, for after an outlay of £5,350, the value of what had been done was estimated at only £4,082, thus leaving a deficit of upwards of £1,200. But against this apparent loss has to be placed the expense that would necessarily have been incurred in providing temporary accommodation for these men, had they remained in the plains, which there is no reason to think, was over-estimated by the Superintending Engineer at £10,000. A very considerable indirect cash saving may

thus be said to have resulted from last year's operations, while the benefits to the Regiment itself have been great. From being sallow, weakly, and unhealthy, the men soon recovered the effects of the fever which they had suffered from at Peshawur, and became ruddy and robust. Out of thirteen women and seventeen children, who were with the working party, not a single case of sickness occurred. The continuance of the experiment has been sanctioned for another year. The aid of a working party of British soldiers will, it is considered, prove valuable in relieving the pressure which is likely to be caused in the labor market by the erection of the new buildings ordered at Rawul Pindee, while there can be no question of the benefit to the men both morally and physically. Without interfering with work, discipline was not neglected; there was a parade once a week in heavy marching order, and occasionally a little drill. The men were hutted, and the cost of these huts is included in the outlay already stated. "No deaths from climate," observes the Executive Engineer in his report of these operations, "no impaired health, no loss in discipline and drill, crime lessened, the men content and anxious to volunteer again for the work, 650 Europeans made expert in the use of the spade axe and in blasting; what more can be said in favor of these working parties." A proposal to employ British soldiers in building barracks, and in carrying out all the works required at a new cantonment in the hills, is under consideration.

Soldiers' Rations.

72. It was one of the recommendations of the Commissioners appointed to enquire into the rationing of the European troops that the use of "Soojee for making bread should be discontinued, and that flour should be employed in its stead."* "Soojee," they remark, "is best obtained from the harder qualities of the Indian red wheats, and is manufactured in light hand mills set for the purpose. These mills from their very lightness turn out but little flour, and give a proportional increase of the granular portions termed 'Soojee,' of which not more than 20 to 25 per cent. can be obtained from any wheat fitted for baking purposes. The remaining 75 per cent. consisting of flour—first and second sorts—pollard and bran, and containing some of the most nourishing principles of the cereal are discarded in the Indian Bakery. Its preparation, too, is attended with great expense, and hence its high rate in the market." * * "The adoption of flour for soojee, while in no way lowering the quality of the soldier's loaf, holds out to the State the prospects of considerable gain. This being dependent on rates and circumstances cannot here be calculated, but may readily be surmised from the fact, that while only 25 per cent. of the 'Soojee' can be obtained from the best of wheat at considerable expense, labor, and contrivance, flour suited to bread purposes can be secured in the proportion of at least 65 per cent. of the cereal." The flour, however, which is sold in the bazaar, will not answer for making bread, and the Commissioners accordingly recommended that proper mills should be established for its manufacture. These recommendations have lately been acted on. The manufacture of bread from flour instead of from soojee has been adopted at several places with success, and the change will be gradually introduced into all the stations occupied by European troops. Not only is there a saving of expense under the new method, but the

* Report, p. 10.

operation is conducted with greater cleanliness, and a more wholesome bread is the result.

Arrangements for Troops travelling by rail.

73. The question of the distance which may be travelled daily by bodies of men in health, invalids, women, and children by railway, and what arrangements should be made on the road for their comfort and convenience, was referred to the Commission for opinion, and has been reported on during the past year. The provision of rest-houses and the arrangements for regular meals and of latrine accommodation have all been considered, as well as the question of how these may be turned to account in the event of epidemic sickness appearing, and rendering a sudden movement of troops advisable.

Planting of trees in Military Cantonments.

74. The Sanitary Commission has expressed a decided opinion that trees should be planted in the neighbourhood of barracks, and considered that they would be beneficial, provided the proper varieties be selected and they be kept well separated and pruned so as to allow of free access both of the light and air. Suggestions have been offered as to the distance from the buildings at which they should be planted, as well as the intervals which should be observed between the rows and between the individual trees. The recommendations of the Commission were approved of by the Government, and it has been considered advisable to carry out such measures in all military cantonments. There can be little question that the presence of trees in the vicinity of barracks has been objected to on altogether insufficient grounds, that if properly attended to, they will assist in purifying the atmosphere, and in checking malaria, while their shade will in time afford a pleasant resort to the men, and the bare and cheerless aspect of many stations will be improved.

Drainage of swamps at Jubbulpore.

75. Some works have been undertaken with the view of draining swamps in the neighbourhood of Jubbulpore, and so improving the station. They are not of an extensive nature, but they deserve mention, as the results are reported to have been marked and highly satisfactory. The land is now dry, and the increased healthiness of the troops has been ascribed to the improvements which have been carried out.

Distribution of the European Army.

76. During the past year the future distribution of the British Forces in India has been resolved on. When the necessary arrangements have been completed, certain stations now occupied by European troops will be abandoned, and so far as political considerations will admit of, the force to be cantoned at stations which have proved to be unhealthy will be reduced. The unhealthiness of the climate of one station in particular renders it extremely desirable to lessen, as much as possible, the number of those exposed to its influence, and it has been accordingly resolved to locate there a reduced garrison in an entrenched position in place of the large force which has hitherto occupied it.

Budget allotment for Military Works.

77. In the Budget of the current year, upwards of two millions sterling have been assigned for military works, £1,800,000 being for original works, and £200,000 for repairs. In these large sums are included the building of new barracks at several stations, and the improvement of existing barracks, in the construction of which proper sanitary arrangements had not been sufficiently attended to. Of this allotment, nearly one million and a half have been sanctioned for expenditure in the Bengal Presidency.

SECTION II.

THE NATIVE ARMY.

78. Dr. Bryden's Tables, showing the amount of sickness and mortality among the Native troops during the year 1865, will be found in the Appendix. They afford very valuable information, and enter into some details which have not been furnished in previous years. For this portion of the Army, however, it is difficult to obtain statistics with absolute accuracy. The strength of the Regiments fluctuates considerably owing to the absence of men on furlough during great part of the year, while the weekly returns exhibit in many cases only the men present with the Head Quarters of their Corps. Moreover, the number sent on sick leave, besides adding in some slight degree to this discrepancy, affects still more the daily average number of sick, and the deaths which occur among men when absent from their Regiments are not unfrequently left unrecorded. Every means is being taken to remedy these defects and to render the returns as strictly accurate as possible, but such sources of slight error should be borne in mind when any comparison is made between the sickness and mortality of the European and Native Armies. Including men absent on furlough and sick leave, the average daily strength of the Regular Native Army during 1865 may be taken at 43,500. The deaths have amounted in all to 1,293, or at the rate of 29·72 per 1,000, a ratio considerably in excess of that among the European Force for the same period. On reference to Table XIII in the body of last Annual Report, it will be seen that this rate is also largely in excess of the mortality of the Native troops during any year since 1861.

Total mortality of the year.

79. But although the deaths in the Native Army during 1865 have been at the rate of 29·72 per 1,000, the bare statement of the fact would lead to very erroneous conclusions. This high ratio has been due not to causes at work in the Army generally, but to special influences affecting that small portion of it which comprised the Bhootan Field Force. This force was exposed to all the dangers of an intensely malarious country and it suffered severely and out of all proportion to the bulk of the Army quartered elsewhere.

Necessity for separating the Bhootan Field Force.

To include this small body of men so singularly situated in one general Return with the entire Native Force would but vitiate the results sought to be obtained. The Bhootan Field Force has, therefore, been placed in a distinct Table, and will be noticed hereafter. Table No. I thus exhibits the amount of sickness and mortality among the whole of the men composing the Regular Native Army, excepting those included in No. II.

80. Leaving the Bhootan Force for separate consideration, the average strength of the Regular Native Army present during the year amounted to 32,129, the maximum having been in January, and the minimum in May. The daily number of sick averaged 1,439 or 4·48 per cent.; the highest average having occurred in the month of

General Statistics.

October, and the lowest in February. The deaths numbered 473, or 14·72 per 1,000. From the foot-note, however, which is appended to this Table, it will be observed that the deaths of men who were at the time absent from their Regiments are not comprehended in this Statement, nor does the average strength include the men absent on furlough or sick leave, and who may be estimated at an additional 10 per cent. Upwards of 200 men are known to have died during the year at their homes or in the hospitals of other Regiments, and if these be included, the death-rate will rise from 14·72 to 19 per 1,000.

Comparison with previous years.

81. If this result be compared with the results of previous years, the comparison will stand as follows:—

STATEMENT XXXVI.

Year.	Average Strength.	Ratio per 1,000 of Average Strength.		
		Daily Sick.	Admitted.	Deaths from all causes.
1861	39,797	40·1	1,169	20·3
1862	35,922	44·8	1,385	17·2
1863	37,459	46·2	1,477	19·7
1864	37,225	43·0	1,389	15·0
1865	32,129	44·8	1,475	19·0

The past year bears a singular resemblance to 1863. The ratios of admissions into hospital and of deaths from all causes per 1,000 are almost identical. As usual, cholera, fevers, and affections of the bowels have supplied the chief forms of sickness, and proved the chief causes of mortality; but as the extent to which these various affections have prevailed has varied much in different parts of the country, it will be more convenient to consider the effect of particular diseases on the Native Army according to the various provinces into which it has been grouped.

Results in Regiments stationed in Bengal Proper and Assam.

82. The first province includes all the Native Army quartered in Bengal Proper and Assam. Here out of an average daily strength of 5,108, there was an average daily sick of 382, or 7·48 per cent. The deaths amounted to 160, or 31·32 per 1,000, a rate more than double that of the Army generally, which, excluding the men who died away from their own Regimental hospitals, and who are not included in the general calculations either of Table I or of the other Tables, amounted to 14·72. Setting aside the Bhootan Field Force, in which it will be hereafter seen that the death-rate amounted to the very high figure of 94·41 per 1,000, the mortality in this first province has been much in excess of that of any of the others. But great part of the sickness and mortality in the Native Regiments embraced in this third Table was due to the fact that not a few of them had come from the Dooars, and had there contracted the diseases from which they suffered. In addition to 160, who died with their Corps, 84 more were ascertained to have died elsewhere, a mortality equivalent to 15·25 per 1,000

83. In the second province, which comprises the Dinapore, Benares, Oude, and Cawnpore Districts, the results have been very different from those which have just been considered. Out of a total average strength of 6,331, the daily sick amounted to only 284, or 4·49 per cent., while the deaths numbered only 110, or at the rate of 17·37 per 1,000. A similar diminution is also observable in the deaths which occurred away from the Regimental hospitals, as these numbered only 47, or 6·75 per 1,000. But even here the effects of the Dooars were felt, and diseases contracted in those unhealthy localities proved fatal some time after the removal of the men from them. In the foot-note appended to this Table, it is stated that one Regiment, after reaching Dinapore, lost 19 men from diseases which were really due to the deadly influences of Bhootan.

Results in Regiments quartered in Dinapore, Benares, Oude, and Cawnpore Districts.

84. As we ascend to the Upper Provinces, the returns become much more favorable, and the fifth Table, which embraces the troops stationed in the Meerut and Rohilcund Districts, shows that out of an average strength of 4,499 men, 152 was the average number of daily sick, or at the rate of 3·38 per cent., while the casualties amounted to only 31, or in the ratio of 6·89 per 1,000. A like improvement is shown in the number of deaths which occurred in men absent from their Corps. These were but 10, or in the proportion of 2·02 per 1,000.

Results in Regiments quartered in the Meerut and Rohilcund Districts.

85. The sickness and mortality exhibited in the sixth Table have been somewhat higher. This Statement embraces the troops stationed in the Agra District and in Central India. Out of an average strength of 4,092, the average daily number of sick has been 216, or at the rate of 5·28 per, cent. while the mortality amounted to 48, or in the proportion of 11·73 per 1,000. The deaths out of hospital were also in a higher ratio than in the province last considered, having numbered 15, or 3·33 per 1,000. The less favorable nature of the results in this province, as compared with that which includes Meerut and Rohilcund, was due chiefly to cholera, which appeared in the former, but from which the latter was exempt, but the distribution and comparative prevalence of this disease, as well as of the other diseases which mainly contributed to the sickness and mortality, will be discussed hereafter.

Results in Regiments quartered in the Agra District and in Central India

86. In the Punjab, as shown in Table No. VII, the results have been comparatively favorable. The average strength of the Regular Native Army stationed in this province during 1865 was 10,540. Out of this number, 355 on an average were daily sick, or 3·37 per cent., and 92 men died, or at the rate of 8·73 per 1,000. In addition 57 men were known to have died at their homes or in the hospitals of other Regiments, or at the rate of 4·92 per 1,000.

Results in Regiments quartered in the Punjab.

87. Tables VIII and IX represent the amount of sickness and mortality in two great divisions of the Irregular Native Army, and the results they exhibit are not embodied in the first Table, which, as has been already pointed out, includes the whole Regular Native Army, excepting that portion which

Results in Punjab Irregular Force.

formed the Bhootan Field Force. The Punjab Frontier Force forms the first of these divisions, and shows results little different from those of the ordinary and Regular Native troops stationed in that province. Out of an average strength of 9,964 men, there was an average daily sick list of 3·24 per cent., and 92 men died, or at the rate of 9·23 per 1,000. In addition 43 men died while absent from their Regiments, and with these, the death-rate of the year may be estimated at 12·27 per 1,000.

Results in Central India Force.

88. The next Table displays the sickness and mortality in the Central India Irregular Force, and here owing chiefly to epidemic cholera, the death-rate for the year has been high. The daily sick-rate and the admission-rate as explained in the foot-note are unavoidably imperfect, but the deaths have all been returned, and amount to 69, or 17·75 per 1,000. It will be observed that the Bhopal Battalion has not been included in this return, and that in this Regiment the death-rate was in excess of even the high mortality of the rest of the force, having risen to 27·40 per 1,000.

Results in Bhootan Field Force.

89. The Bhootan Field Force, the statistics of which are given in the second Table, alone remains to be mentioned. As has already been alluded to, the sickness and mortality among these men were excessive; out of an average daily strength of 5,084, an average number of no less than 699 were daily sick, or at the rate of 13·75 per cent., while the deaths amounted to 480, or 94·41 per 1,000. These figures give some idea of the deadly influences of the Dooars, which the facts stated in the note appended to the Table even more forcibly illustrate. This small force lost by death and invaliding upwards of 2,000 men; over 1,300 were sent away for change of climate, and of these 127 died—casualties which are not included in the body of the Table. In order to complete the view of this Bhootan Force, the information contained in the two following Statements should be considered along with that given in No. II. The first exhibits the sickness and mortality among the Native Regiments forming this force during the months of November and December 1864. The second shows the sickness and mortality among them from the 1st January to 1st March 1866, the date on which it was broken up.

STATEMENT XXXVII

Showing the Sickness and Mortality among the Native Regiments forming the Bhootan Field Force during the months of November and December 1864.

NOVEMBER.	Daily Sick.	Treated.	Died.	DECEMBER.	Daily Sick.	Treated.	Died.
30th Regiment N. I. ... Strength 642 ...	13	68	.....	11th Regiment N. I. .. Strength 603 ...	32	71	1
3rd Goorkhas ... „ 563 ...	25	86	2	12th „ „ ... „ 357 ...	7	31	.....
Sappers and Miners ... „ 144 ...	11	42	.....	30th „ „ ... „ 624 ...	11	55	2
				44th „ „ ... „ 248 ...	12	66	.....
				3rd Goorkhas „ 408 ...	10	56	1
				5th Cavalry „ 144 ...	7	19	.....
				Sappers and Miners ... „ 144 ...	4	19	.....

Causes of Admissions and Deaths.

		Cholera.	Fevers.	Dysentery.	Diarrhœa.	Chest Diseases.	Rheumatism.	Venereal.	Eye Diseases.	Abscess and Ulcer.	Wounds and Accidents.	All other causes.		
Total Admissions of November and December	513	7	241	101	24	4	24	9	3	15	68	17	...	...
Total Deaths of same period	6	3	1	...	...	...	...	...	...	...	2	...	...	...

STATEMENT XXXVIII.

Showing the Sickness and Mortality of the Bhootan Field Force from the 1st January 1866 to 1st March 1866, the date at which the Force was broken up.

JANUARY.	Daily Sick.	Treated.	Died.	FEBRUARY.	Daily Sick.	Treated.	Died.
Royal Artillery ... ... Strength 202 ...	19	31	1	Royal Artillery... ... Strength 193 ...	11	22	.....
Eurasian Artillery ... „ 74 ...	6	23	.....	Eurasian Artillery ... „ 75 ...	7	22	.....
Seebundy Sappers ... „ 175 ...	10	39	1	Seebundy Sappers ... „ 174 ...	10	33	1
Bengal Sappers and Miners „ 304 ...	25	113	.....	Bengal Sappers and Miners „ 246 ...	12	72	.....
14th Cavalry ... ... „ 312 ...	40	97	1	17th Bengal Cavalry „ 426 ...	48	63	.....
17th „ ... ... „ 439 ...	39	106	1	6th Regiment N. I. „ 580 ...	50	95	1
6th Regiment N. I. ... „ 581 ...	70	101	9	9th „ „ „ 617 ...	64	62	2
9th „ „ „ 618 ...	82	171	6	12th „ „ „ 379 ...	23	28	1
12th „ „ „ 372 ...	33	60	.....	19th „ „ „ 512 ...	12	25	.....
19th „ „ „ 514 ...	15	57	.. ...	26th „ „ „ 614 ...	12	118	.....
26th „ „ „ 647 ...	70	168	2	31st „ „ „ 425 ...	45	59	.....
31st „ „ „ 442 ...	29	90	.....	32nd „ „ „ 789 ...	19	97	.....
32nd „ „ „ 794 ...	14	75	4	43rd „ „ „ 221 ...	7	22	.....
43rd „ „ „ 212 ...	5	21	.....	44th „ „ „ 459 ...	23	54	3
44th „ „ „ 482 ...	37	91	.....	1st Goorkhas „ 655 ...	19	50	1
1st Goorkhas ... ... „ 657 ...	19	41	1	3rd „ „ 546 ...	53	38	.....
3rd „ ... ... „ 557 ...	58	72	4	Depôt Hospital, Buxa... „ 25 ...	25	15	.....
Depôt Hospital, Buxa... „ 44 ...	44	22	.....	Depôt Hospital, Gowhatty „ 105 ...	105	72	.....
Depôt Hospital, Gowhatty „ 130 ...	130	55	.....				

Strength of the Regular Native Troops, January, 7,105, Daily Sick, 710, or 10 per cent.
„ „ „ February, 6,599, „ 517, or 7·83 „

Causes of Admissions and Deaths.

		Cholera.	Fevers.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen.	Chest Diseases.	Scurvy.	Rheumatism.	Venereal.	Eye Disease.	Abscess and Ulcer.	Wounds and Accidents.	All other causes.	Total Admissions and Deaths of January and February 1866.	
Royal Artillery ...	Admitted ...	.....	15	3	6	.....	1	2	.....	6	4	3	3	3	7	Total Admissions ...	53
	Died ...	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Total Deaths ...	1
Eurasian Artillery...	Admitted ...	.....	18	4	3	1	.....	.....	.....	4	5	1	.....	5	4	Total Admissions ...	45
	Died ...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	Total Deaths ...	.....
Seebundy Sappers ...	Admitted ...	.....	32	4	2	.....	1	3	1	1	.....	.....	15	10	3	Total Admissions ...	72
	Died ...	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	Total Deaths ...	2
Native Army ...	Admitted ...	.....	733	394	127	4	8	175	95	151	27	10	221	103	162	Total Admissions ...	2,210
	Died ...	.....	10	10	3	.....	.....	4	3	1	.....	.....	2	2	1	Total Deaths ...	36

90. In Tables Nos. X and XI, the statistics of the Regular and Irregular Native troops according to the several provinces have been compared, and in each the relative ratios of admissions and of deaths are shown under the chief diseases. If the provinces be arranged in order according to their comparative rates of mortality, they will stand thus:—

Comparison of different Provinces.

STATEMENT XXXIX.

Province.	Ratio per 1,000		
	Of Admissions into Hospital.	Of Deaths from all causes in Regimental Hospitals.	Of Deaths from Cholera.
Bhootan Field Force	3,849	94·4	22·23
Bengal Proper and Assam	2,135	31·32	9·20
Central India Force	*	17·75	8·75
Dinapore, Benares, Oude, and Cawnpore...	1,333	17·37	2·53
Agra and Central India	1,611	11·73	3·18
Punjab Irregular Force	1,205	9·23	0·20
Punjab	1,295	8·73	0
Meerut and Rohilcund	1,294	6·89	0

* Imperfect.

Nothing could well more strikingly illustrate the results of climatic influences in affecting the amount of sickness, and still more in determining the proportion of fatal cases. The ratio of admissions into hospital from among the Bhootan Field Force, for example, was little less than three times what it was in the Meerut or Rohilcund Divisions, but in the former the death-rate was more than thirteen times what it was in the latter.

91. The above Statement also illustrates the comparative mortality from cholera, while its relative prevalence will be seen by reference to Table XIV. From the first it appears that, with the exception of the Bhootan Force and of Bengal Proper, the deaths from this disease during the year were few, while in two of the provinces no death whatever was due to it. Table XIV is of value, not only as showing the local distribution of cholera, but also as illustrating the times of its appearance in the different localities. In Bengal Proper and in Assam, there were in all 99 admissions from among the Native corps, of which 47, or 47·47 per cent., proved fatal. The disease, it will be remarked, was continuous throughout the year. No month was free from it, showing its endemic nature in those parts. It reached its maximum in May.

Mortality from Cholera.

In the Dinapore, Benares, Oude, and Cawnpore Districts, there were in all but 28 cases among the Native troops, and of these, 16 proved fatal. In these

districts it was confined to one-half of the year, appearing in the months of May, June, July, August, September, and October, and entirely absent during the rest of the year. Moreover, instead of appearing at every one of the stations, as was the case in the first province, it was confined to six out of the ten.

In the Meerut and Rohilcund Divisions, one case is recorded. It occurred in the month of May at Deyrah. As has been seen, there was not a single casualty from the disease.

In the Agra District and in Central India, cholera was epidemic. There were 22 cases and 13 deaths among the Regular Native troops quartered there, the disease, however, being confined to the months of June, July, August, and September, and to the three stations of Agra, Morar, and Jhansi.

In the Central India Force, 48 cases were admitted in the months of May, June, July, August, and September, of which 34, or 70·83 per cent., died.

In the Punjab, only one case is entered in the returns. It is reported to have occurred at Umballah in the month of March. The man recovered.

In the Punjab Frontier Force, there were 6 cases occurring in the months of April, May, June, and September; of these 2 were fatal.

With the Bhootan Field Force, we return to the region of endemic cholera, and here we have 191 admissions from the disease extending over eight months of the year, and 113 of them fatal, or in the ratio of 59·16 per cent. of admissions. Excluding Central India, in which cholera prevailed in 1865, the year has been free from epidemics of the disease. This epidemic has been already referred to in the first section of this Report. It attacked the Native troops but partially, but it will be considered again in connection with the prisoners and free population, both of whom suffered from it severely.

Mortality from Small-pox.

92. Out of the whole Regular Native Army, there were during the year but 69 cases of small-pox. In the Bhootan Field Force, there was but one, in the Central India Force but one, and in the Punjab Frontier Force 16; of these 15 in all proved fatal. The statistics as shown in the first half of Table XIV fully bear out all that has been said as regards the monthly distribution of the disease; from the six months between May and December, there was not a single case of small-pox in the whole Regular Native Army, or in either the Bhootan or Central India Force. In the Punjab Frontier Force, no case was admitted in either September or October. The total mortality from small-pox in this force was at the rate of ·60 per 1,000, and in the Regular Native Army, it amounted to only ·28 per 1,000.

Fevers.

93. Fevers have, as usual, most largely contributed to the sickness. As regards the Regular Army, out of an average strength of 32,129, there were 24,003 admissions from the various forms of fever, but chiefly intermittents, or at the rate 74·71 per cent. But although much more prevalent than any other disease, fevers caused a mortality during the year of only 4·38 per 1,000. In Table No. X, the relative proportion of admissions from this and other diseases in

the different groups, as well as the extent of mortality thereby occasioned, is clearly shown. In the first group, fevers caused 114 admissions per cent. of average strength. In the fifth they caused 67 per cent. In the third group, they caused only 59 per cent. It will be observed also that while in Bengal Proper the deaths were 4·50 per 1,000 from intermittent fever, and 3·13 from remittent and continued fevers, the deaths in the Punjab amounted to 2·66 from the former, and ·95 from the latter, while in the Meerut and Rohilcund Divisions, in which the minimum mortality occurred, the deaths were only in the ratio of ·66 per 1,000 from intermittent, and ·66 from other varieties of fever. But although fevers were most prevalent in Bengal Proper and Assam, and although the greatest mortality was occasioned by them in this province, it will be seen, on reference to Table XII, that the maximum rate of sickness from this class of diseases at any individual station was reached in the second province at Banda, where the admissions were 241 per cent. of average strength. If those stations be separated at which the admissions from fever reached 100 per cent., they will be found to be nine—Barrackpore, Dacca, Sylhet, Debroogurh, and Bhaugulpore in the first province, Banda in the second, Bareilly in the third, Lullutpore in the fourth, and Peshawur in the Punjab. The fact of Bareilly, a station which, in ordinary years, is unusually healthy, being included in this list is deserving of notice. It is still more singular, as will be seen on reference to Table No. XVI, that fevers prevailed in only one of the two Native corps quartered there, the other not having suffered from them to any unusual extent. The fact is all the more remarkable, because both Regiments had been at Bareilly for upwards of a year, and could hardly have imported the disease from elsewhere. Fever was very prevalent both in the Central Prison and among the general population of that portion of Rohilcund. The lowest per-centage of admissions from fever throughout the full year was at Moradabad, where it amounted to 25·26 per 100.

In the Bhootan Field Force the admissions from fevers amounted to 210 per cent., and the deaths to 20· per 1,000, but these figures by no means fairly represent either the prevalence or the fatality of the disease, so many men having been sent away as the only probable means of their recovery.

In the Central India Force the admissions from fevers were 32 per cent. of average strength, and the deaths 3·6 per 1,000. In the Punjab Frontier Force the admission-rate was 56 per cent., and the death-rate, 2·51 per 1,000.

Dysentery and Diarrhœa.

94. Dysentery and diarrhœa which may properly be considered together have proved a fertile source of sickness and mortality. In the Native Army generally, as shown in Table No. I, the admissions from the former were 10·02 per cent., and the deaths, 1·25 per 1,000; from the latter, the admissions were 8·05 per cent., and the deaths, 1·37 per 1,000. The greater prevalence of both diseases in the Lower Provinces is well illustrated, for we find that while 24 per cent. of strength were admitted from each disease in Bengal Proper and Assam, the admission-rate in the Punjab was under 6 per cent., or less than one quarter, while the death-rate, which in the former was 3·5 and 5 per 1,000, fell in the latter to ·29 and ·66 per 1,000. From dysentery the highest per-centage of admissions was at Barrackpore, where it reached 49·23, and the lowest at Ferozepore, where it was only 1·20 per cent. Diarrhœa also reached its maximum and minimum

prevalence at these two stations, the admissions from this disease having been 39·07 at the one and ·75 at the other.

Among the men of the Bhootan Force, bowel complaints were both prevalent and fatal, the admissions from this cause having been 77·62 per cent., and the deaths 26·16 per 1,000, figures which, however, as has been already explained in the case of fevers, very imperfectly represent the unhealthiness of the locality.

Venereal Diseases.

95. Venereal diseases have caused an admission-rate of 5·11 per cent. in the Army generally, the total number of men treated for these affections having been 1,642. On reference to Table XII, the comparative prevalence of the disease at different stations is shown. The highest ratio of cases was at Nagode, where it reached 14·77 per cent., and the lowest at Mooltan, where it was 1·11. In the Bhootan Field Force the per-centage of admissions was 3·05. In the Central India Force, 4·86, and in the Punjab Frontier Force, 2·71. Other diseases do not call for any special remark.

Comparison of Stations.

96. If the admissions per cent. of strength given in the last column of Table XII be considered along with the ratio of deaths per 1,000 from all causes given in Table XIII, a comparison may be made of the various stations in the Bengal Presidency as regards the amount of sickness and mortality which has prevailed at each during the year. As regards admissions, excluding Bhootan where they amounted to 3,849 per 1,000, the highest ratio was at Nowgong, where they amounted to 3,193; next comes Barrackpore, where they were 3,150, and then Banda, where they were 3,021. At none of the other stations did they reach 3,000, and in only five, and these chiefly in the Lower Provinces, were they between 2,000 and 3,000; the lowest rate for the full year was at Moradabad, where it amounted to 652 per 1,000.

If the death-rate of the several stations be considered, it will be found that, excluding Bhootan where it amounted to 94·4 per 1,000, the highest mortality occurred at Sylhet and Cachar, where it amounted to 58·08; next comes Barrackpore with a death-rate of 35·77. At seven stations, the mortality exceeded 30 per 1,000, viz., at Fort William, Barrackpore, Dacca, Sylhet, Debroogurh in the first province, and Dinapore and Nagode in the second. In two stations the deaths amounted to between 20 and 30 per 1,000, viz., Alipore and Bhaugulpore; at all the others the ratio was below 20. The lowest death-rate of the year was at Ferozepore, where it was only 1·51 per 1,000.

Comparison of Regiments.

97. Tables XV, XVI, and XVII give a comparative view of the amount of sickness and mortality in each Regiment of the Regular Native Army, while No. XVIII gives the same information regarding the Irregular troops. The first group includes those corps stationed in Bengal Proper and Assam, and also those composing the Bhootan Field Force. The latter suffered most, and the death-rates of 82, 87, 96, 133, 138, 155, and 157 per 1,000, which occurred in the 5th Bengal Cavalry, the 29th, 44th, 12th, 31st, and 11th, Native Infantry and in the

14th Bengal Cavalry show the deadly influences to which they were exposed. It will be observed, however, that the 3rd Goorkhas, which formed part of this force, lost the comparatively small proportion of 34·85 per 1,000. But independent of the Dooars, the Regiments included in this Table all suffered severely. The 5th Native Infantry, stationed at Sylhet and Cachar, lost 107·14, and the 6th at Barrackpore, 66·44 per 1,000. The death-rate of the 39th at Cheera-poonjee was 24·84, and this was by much the healthiest of the group.

The next Statement embraces all Regiments of the Regular Army quartered in Behar, Oude, the North-Western Provinces, and Central India, and presents a very favourable contrast to that which precedes it. The total death-rate has fallen from 74·18 to nearly one-fifth, or 15·77 per 1,000. Owing chiefly to cholera, but in great part also to the unhealthy influences of Chittagong, where it had been previously stationed, the 38th Native Infantry at Nagode suffered out of all proportion to any of the rest. The death-rate among the men of this corps was as high as 72·92, whilst the next highest rate in this group is that of the 40th Regiment at Banda and Nowgong, in which it amounted to 26·23 per 1,000. In four of these corps, the mortality was less than 5 per 1,000.

Among the Regiments stationed in the Punjab, the highest death-rate was in the 13th Native Infantry at Peshawur, and the next in the 27th Regiment at the same station. Their mortality of 35 and 25 per 1,000 is much in excess of the ordinary rate of the province, which averages 14·54. But it is remarkable that the 9th Cavalry, which was also stationed at Peshawur, had a mortality of only 2·23, the lowest in this group.

Of the whole Native Army, the corps in which the greatest number of admissions into hospital took place was the 44th Native Infantry, which occupied Gowhatty, Assam, and Bhootan, and in which they amounted to 406 per cent. of average strength. The least was in the 18th Cavalry at Rawul Pindee in which it was only 50 per cent. The highest rate of mortality occurred in the 5th Regiment Bengal Cavalry in Bhootan, in which it was 157·18 per 1,000, and the lowest in the 3rd Cavalry at Bareilly, in which it was 2·16 per 1,000.

The particulars of the sickness and mortality in the Regiments comprising the Punjab Frontier and Central India Irregular Forces are given in Table XVIII. Being local corps and so differently situated from the Army generally, it is believed that the statistics of their sickness and mortality will be more valuable if kept distinct.

98. Having briefly called attention to some of the main facts shown in the Tables, there are but few points in connection with the sanitary condition of the Native Army which remain to be considered.

Hospitals for Native Troops.

The principles on which hospitals for Native troops are in future to be constructed have been fully weighed by the Government, and the conclusions which have been arrived at with regard to this important question may be briefly stated. It has been considered that single-storied buildings having their floors raised three feet in dry climates and five feet in damp climates should suffice, but where

the soil retains much moisture, the buildings should have a vaulted basement. When space is restricted, or when it is required to accommodate more patients than can be conveniently placed in one floor, a second story may be resorted to. A single building is considered sufficient for every description of Native regimental hospital. The following have been laid down as the component parts of which a Native regimental hospital should consist :—

1. Wards for the sick.
2. Ward-offices, viz., Superintendent's rooms, sculleries, privies, ablution-rooms.
3. Accommodation for Native Doctors.
4. Dispensary and receiving-room.
5. Cook-room.
6. Out-door lavatory.
7. Out-door privy.
8. Guard-room.
9. Dead-house, a simple enclosed shed 12 feet square.
10. Servants' houses.
11. Enclosure wall or railing.

For Infantry hospitals, two general wards and two small wards for special cases are to be provided. For Cavalry hospitals two general and one small ward for a full Regiment, and one general and one small ward for a Detachment. Beds are to be arranged on the opposite sides of the wards with their heads to the walls, so that not more than two beds be placed in the wall space between two doors on the same side of the ward, or between the opposite doors of the ward, there being not less than half as many doors in the length of the ward as there are beds. The width of the ward is to be 22 feet, the height 16, the wall space per bed 9, the area per bed 99 superficial feet, and the cubic feet 1,584 per bed. The cook-room is to consist of a well ventilated building 36′ × 14′, divided in the centre by a cross-wall, one compartment being for Hindoos, and the other for Mussulmen. Beds will be provided as follows :—

Infantry.

Full Regiment	50 Beds.

Cavalry.

Full Regiment	25 Beds.
Wing at Head Quarters	13 „
Detached Wing	12 „

When a Squadron is detached—

Head Quarters	17 Beds.
Detachment	8 „

Latrines for Native Troops.

99. The rules recommended for the general sanitary administration of cantonments, which have been considered under the first section, will, when carried out, do much to improve the health of the Native as well as of the European troops. The question of providing latrines for the former, and also for the whole native population of military stations, was separately considered by the Commission. The necessity of this reform was pointed out, and plans suitable for the purpose were suggested for adoption.

SECTION III.

JAILS.

Number of Prisoners.

100. During the year 1865, there has been an average daily number of 54,337 prisoners in confinement throughout the Bengal Presidency. In 1859 the number was only 46,733, but on examining the details, it will be found that while the prison population in the other Provinces during the past seven years has undergone but comparatively little change, that of the group of jails which embraces Behar and Oude stands very nearly at double the figure it was seven years ago—a result due mainly to the fact that when the earlier Returns were prepared, only a small part of Oude had as yet been re-occupied. The yearly average strength of the jails in the various groups from 1859 to 1865 is shown in the following Statement:—

STATEMENT XL.

Year.	Bengal Proper.	Behar, Benares, and Oude.	Nagpore and Central India.	Rohilcund, Meerut, and Agra.	Punjab.	Bengal Presidency.
1859	15,359	8,605	4,844	7,196	10,729	46,733
1860	14,335	9,511	4,981	7,695	9,826	46,348
1861	13,924	11,398	5,089	9,669	10,835	50,915
1862	14,692	13,975	5,316	8,534	10,354	52,871
1863	15,087	14,664	4,975	8,043	9,632	52,401
1864	14,441	15,450	5,448	7,641	9,630	52,598
1865	14,598	16,343	5,221	7,693	10,482	54,337

Favorable comparison of 1865 with 1864.

101. The year which has just passed as regards sickness and mortality presents a very favorable comparison with its predecessor; for while in 1864 the daily sick per cent. of strength was 4·12, in 1865 it has been only 3·54. In the one year the number admitted into hospital per cent. of strength was 122·73, in the other it was 115·40. While the total mortality of 1864 was 70·19 per 1,000, in 1865 it has fallen to 57·66.

Nor is the improvement confined to one particular group of jails. In Nagpore, indeed, there has been a lamentable increase of mortality; and in Oude the same high ratio existed as in the year previous; but in all the other

Provinces there has been a marked diminution both in the ratio of sick and in the ratio of deaths, as will be seen from the following Statement :—

STATEMENT XLI.

Year.	Bengal Proper and Assam.		Dinapore, Benares, and Oude.		Nagpore and Central India.		Agra, Meerut, and Rohilcund.		Punjab.		Bengal Presidency.	
	Daily sick per cent. of Strength.	Died per 1,000 of Strength.	Daily sick per cent. of Strength.	Died per 1,000 of Strength.	Daily sick per cent. of Strength.	Died per 1,000 of Strength.	Daily sick per cent. of Strength.	Died per 1,000 of Strength.	Daily sick per cent. of Strength.	Died per 1,000 of Strength.	Daily sick per cent. of Strength.	Died per 1,000 of Strength.
1864	5·19	67·10	3·10	67·57	4·75	51·76	3·36	74·73	4·40	85·77	4·12	70·19
1865	4·70	58·85	3·04	67·67	5·55	104·77	1·87	33·15	2·97	34·92	3·54	57·66

The total daily ratio of sick per cent. throughout the Presidency does not, indeed, show any very marked diminution, but the proportion of deaths shows a mortality during 1865 of 13 per 1,000 less than it was during 1864.

Favorable comprison of 1865 with previous years.

102. It is gratifying to observe that even the daily sick per cent. of strength has been gradually falling during the last seven years, and that the mortality of 1865 has been less among the prisoners than during any year included in Dr. Bryden's Tables.

These facts are illustrated by the following Statement :—

STATEMENT XLII.

Year.	Average Strength.	Daily sick per cent. of Strength.	Admitted per cent. of Strength.	Died per 1,000 from all causes.
1859	46,733	5·29	133·63	82·77
1860	46,348	5·74	149·18	110·81
1861	50,915	4·83	131·42	96·65
1862	52,871	4·66	134·61	66·75
1863	52,401	4·88	136·88	85·84
1864	52,598	4·12	122·73	70·19
1865	54,337	3·54	115·40	57·66

Chief causes of sickness and mortality.

103. If the details be examined, it will appear that the proportion of mortality due to cholera did not vary much from what it was in the year previous, the ratio of deaths per 1,000 of strength from that disease having been 8·56 in 1864 and 7·19 in 1865. Under the head of "Fevers" there has been

a marked diminution, the ratio of deaths per 1,000 of average strength having fallen from 22·11 in 1864 to 12·71 in 1865. Dysentery and Diarrhœa maintain much the same high place as a cause of death, the deaths per 1,000 of strength having been 24·03 in 1864 and 23·21 in 1865. The other diseases occupy a comparatively small place. Those which have been named constitute the great sources of sickness and mortality and demand more particular mention.

Mortality from Cholera in 1st group.

104. Of the deaths from cholera 148 occurred in Bengal Proper and Assam, a Province in which the disease is endemic, and from which it is never absent. If the Table showing its prevalence (No. X) be examined, it will be seen that, though seldom prevailing to any great extent, it still was present during every month of the year in one or other of the jails comprising this group; that it reached its maximum in April and minimum in December, and that of every 1,000 prisoners 10·15 died of it.

Cholera in 2nd group.

105. As we ascend, the deaths not only diminish to less than one-half the proportion of what they were in Bengal, but the disease is less uniformly distributed throughout the various months; January and December are altogether free, and excepting the jails of Patna, Deegah, and other places which lie on doubtful ground, and which it is difficult to know accurately where to place, whether within the limits of endemic cholera or not, the disease may be said to have been confined to two Jails, Seetapore in Oude, and Allahabad. In the former the disease appeared in August, attacking 8 prisoners, of whom 2 only died. In the latter 30 were attacked in September, and of these 11 died. The per-centage of deaths was thus unusually small.

Cholera in 3rd group.

106. In the next group, including the Central Provinces, cholera was more violent than in any of the others, and the proportion of deaths—27·39 per 1,000—greater than in the whole of the rest of the Provinces put together. In Nagpore Jail the epidemic was severe, 102 cases were admitted into hospital, and 54 died. In Raipore also it was prevalent and fatal, there having been 72 prisoners attacked and 40 deaths. The disease was distributed over eight months of the year, January and February, November and December, being alone free from it.

Cholera in 4th group.

107. In the Agra, Meerut, and Rohilcund Districts, out of 17 jails, cholera appeared only in four, and in two of these it was confined to a single case. In Agra and Etawah alone can it be said to have been epidemic. Following its ordinary history in the former place, there was a sporadic case in April, and a more extended invasion in July and August; out of 32 cases, 20 proved fatal. The excellent measures which were adopted with great promptitude by Dr. Moir, the Superintendent of the Prison, in removing the prisoners from the jail were, no doubt, most beneficial in preventing a more formidable extension of the disease. The Etawah epidemic occurred in August. It was very limited in extent and of a singularly mild character; of 9 admissions only one died. Unlike the groups previously alluded to, it will be observed that, instead of spreading over the greater number of months of the year, the appearance of the disease was confined to April, July, August, and October.

Cholera in 5th group.

108. The limited distribution of the disease in the higher Provinces, both as regards the months of the year in which it appears and the number of jails attacked, is shown still more strikingly in the Punjab group; for here, out of a daily average strength of 10,482 prisoners, only 5 were attacked and 2 died. One of these occurred during the temporary absence of the Medical Officer, and is noted as in all likelihood a case of sun-stroke. The other occurred at Hissar; it was a case of true cholera, and probably formed part of the same epidemic as attacked the Agra Jail. Out of an average strength of over 10,000 prisoners, there was thus only one casualty from cholera during the year. Cholera, indeed, there is every reason to believe, is a disease as little a native of the Punjab as it is of England, and there can be no more interesting study than a comparison of its appearance and its history in these various groups, or provinces of disease, in those years when it keeps within its endemic limits, and those in which it extends beyond them and becomes epidemic.

Bowel complaints.

109. Dysentery and Diarrhœa form a class of disease proving more fatal to prisoners than any other. Out of 57·66 deaths per 1,000, 23·21, or more than a third, were due to this cause. In the Dinapore, Benares, and Oude groups, the death-rate from these diseases was as high as 38·45. But this was chiefly due to excessive mortality in the Lucknow Central Prison, of which more detailed notice will be taken hereafter. Bowel complaints have long proved the most prevalent and most intractable diseases of prisoners. They belong almost exclusively to the variety dependent on low vital energy, and there is no cause of sickness and mortality which may be expected more decidedly to be affected by improved sanitary measures.

Contagious Fever.

110. Fever is another disease of which special mention must be made; and this is of all perhaps the most interesting and important, for the fever which has especially of late years prevailed and added so largely to the mortality of our jails has not been the ordinary fever, but an insidious disease of a very fatal character, and which there is reason to believe is eminently contagious. The subject is fraught with such vital importance both to prisoners and the general population of this country, that a brief notice of what is known of its history and progress within the jails may here be given.

In 1860 both the Agra and Meerut Central Prisons were attacked with a very malignant fever, which, combined with a previous epidemic of cholera, occasioned in the Meerut Prison a rate of mortality which has happily been rare even in the experience of jails. Dr. Walker, the Superintendent of the Agra Central Prison, wrote a very interesting account of the epidemic which came under his notice. It would be out of place to describe here the symptoms of the disease; suffice it to say that it was a fever marked by a marvellously rapid prostration of the vital powers, proving fatal sometimes even to the strongest within a few hours, and in other instances on the fifth and ninth day after attack; that vomiting of dark matter was frequent; that a yellow jaundiced appearance, bleeding of the nose, low delirium, and coma were often attendant; relapses were also common. Moreover, there was little doubt that quinine proved

of no avail, and there was ample evidence to show that the disease had spread by contagion. Although there was no eruption on the skin, Dr. Walker came to the conclusion that the disease was a true typhus. Much difference of opinion has arisen as to the correctness of this opinion; other observers, discarding the term typhus, have considered the disease to be the true Yellow Fever, while some again believe it to be identical with the Relapsing Fever of Europe. It would be out of place to discuss this question here, nor is it necessary in a sanitary point of view. For all practical purposes it is sufficient to bear in mind that this fever is of a character totally different from the ordinary fever of India, and the name *Contagious Fever*, by which it will hereafter be spoken of, appears to be the most appropriate as avoiding all theories, and merely stating that characteristic of the disease which it is most important should be borne in mind. But as it is very desirable that the peculiar symptoms of this fever should be widely known and early recognized, extracts from Dr. Walker's description of it are given in the Appendix, as well as portions of Dr. Gray's report of the epidemic which proved so fatal in the Lahore Central Prison in 1863-64.

Contagious Fever in previous years.

111. Since 1860 the same disease which up to that period had been for many years comparatively unknown has largely affected the amount of sickness and mortality in jails. To prove this it is only necessary to refer to the Tables which accompanied the Commission's last Annual Report. In 1860, besides invading both the Agra and Meerut Central Prisons, it also attacked both Allahabad and Lucknow. In 1861 it prevailed both in the Allygurh and Meerut Jails in the North-West, and in the Thanesur, Umballah, Loodianah, and Jullundur Jails in the Punjab. In 1862 it was again among the Agra, Meerut, Allygurh, Umballah, Loodianah, and Jullundur prisoners, besides appearing both in the Budaon and Bareilly Jails. In 1863 it was in Raipore, Agra, Muttra, Allygurh, Bareilly, Moradabad, Delhi, Lahore, and Mooltan. In 1864 its deadly influence was even more extended, for it appeared in no less than 11 jails, Raipore, Cawnpore, Futtehghur, Agra, Delhi, Umballah, Umritsur, Lahore, Goozranwallah, Mooltan, and Rawul Pindee. The fearful import of such a visitation may be judged of by the fact that, in the Lahore Central Prison Epidemic of 1863-64, 400 prisoners died. In 1864 the casualties from this disease, including the deaths from its sequelæ, are returned as having amounted to no less than 1,200, or one-third of the total mortality of the year.

Contagious Fever in 1865.

112. Nor has 1865 been free from the dreaded scourge. Raipore, Nagpore, Jubbulpore, Bareilly, Sirsa, Umballah, Umritsur, Lahore, Goojrat, Gogaira, Peshawur, Bunnoo, have all more or less suffered. In these twelve jails no less than 349 deaths have occurred from fever. In Fyzabad, Sooltanpore, and Seetapore also, the disease would appear to have been present, although the mortality it occasioned was comparatively small. The point is doubtful, for the mere fact that it has not been recognized is no proof that the disease has not attacked a jail. Indeed, on the contrary, the history of nearly all the epidemics which have been recorded show that the fever had proved so insidious in its first appearance and in its spread among the prisoners, that the true nature and special danger of the disease was unhappily not recognized until it was too late.

113. In the rules for preventing the spread of epidemic sickness in jails, which were prepared by the Sanitary Commission by order of the Government, this peculiar fever received prominent notice. "Gangrene and Cholera," wrote the Commission, "can hardly escape observation, but the approach of this fatal form of fever is often and indeed generally so insidious, that it frequently attracts no attention until the poison has been widely disseminated, and the Medical Officer finds that he has to cope with a wide-spread, most formidable, and most fatal disease." Full directions were given for guarding as much as possible against its entry within the jail, and also as regards the measures which ought to be adopted in the event of its unhappily having effected an entrance without having been observed. Among the former a regular system of quarantine was recommended, to which all prisoners should be subjected before being allowed to mix with the former inmates.

Insidious nature of the Fever.

114. The value of a careful observance of this simple rule, which had already been in force in some jails, may be learned from the following extracts taken from the Annual Jail Reports of 1865. Dr. Grant, the Superintendent of the Futtehghur Prison, writes, "though epidemic typhoid fever prevailed to a great extent in the neighbourhood during the first half of the year, I am glad to state the prisoners entirely escaped the disease. It is true three cases of typhoid fever were recorded, but all were labouring under the disease on admission into the jail. The character of the fever was at once recognized, and each case as it occurred was placed in a shed in a jail-garden, and strict quarantine maintained. Two of the cases were liberated by order of the magisterial authorities, and the remaining one was under treatment at the end of the year. To the early recognition of the nature of the disease and the adoption of these measures, I believe the jail owes having escaped another epidemic."

Effect of Quarantine at Futtehghur.

115. The experience of Dr. Kilkelly, the Superintendent of the Jail at Allyghur, is to the same effect. This jail as well as that of Futtehghur had suffered severely from contagious fever in former years, and the following account of the measures which were adopted with success, to prevent a recurrence of a similar fatal outbreak, is therefore all the more full of interest. "The only three cases of fever from which death resulted were remarkable for the severity of the symptoms with which the disease showed itself, and the rapidity with which it ran its course to a fatal termination. The history of the cases referred to is as follows. Five Hindoos travelling in company from Jeypore to the Ganges were arrested in the district for a robbery, and were sent into the lock-up on the 25th of March apparently in perfect health. On the 31st March, one of them was admitted into hospital suffering from intense rigors, which he stated had come on suddenly. His case rapidly showed decided typhoid symptoms. He fell into a state of collapse, became insensible, and died on the 2nd of April, or four days after his admission into hospital. On the 14th April a second of the prisoners was taken to hospital with exactly the same symptoms as the first. His case was very severe, and ran the usually protracted course of typhoid fever; after two or three relapses he recovered and was discharged convalescent on the 2nd June. On the 18th and 20th of

Effect of Quarantine in Allyghur Jail.

April, the third and fourth of the gang were attacked in the same manner as the first and second. Their cases ran courses similar to that of the first, and terminated in death on the 22nd.

"From the fact of some very severe cases of fever having been noticed by me in the dispensary about the time among pilgrims from Jeypore, I suspected, upon the occurrence of the first case in the jail, that the disease would prove to be of a malignant character, and I at once removed the whole of the Jeypore prisoners from the Hawalat, confined them in a separate ward, and took steps to prevent their having any intercourse with the other prisoners in the jail. Though the disease from which they suffered did not spread, I look upon their cases as interesting, inasmuch as they tend to show how epidemics are originated in jails.

"No other cases of the same type occurred in the Allyghur Jail, either before the Jeypore prisoners were sent there, or after the survivors had been discharged, and I think it may fairly be inferred that these Jeypore men were infected with the seeds of the disease which proved so fatal to them before their arrest, and that had they not been at once removed from the Hawalat barrack, they might have been the cause of infecting other prisoners, or perhaps of originating an epidemic in the jail."

In connection with this statement it should be mentioned that the same contagious fever had been very prevalent and fatal among the prisoners in the Jeypore Jail. During two successive years it had appeared. In 1863-64, 304 cases had been admitted, and 76, or at the rate of 25·5 per cent., died. In 1864-65, out of 355 cases, there were 75 deaths, or 21·12 per cent. In these epidemics the peculiar symptoms were more than usually well marked. "The disease commenced with shivering, intense pain in the head or orbits, suffused eyes, rapid pulse," followed a few hours after by great pain and heat over the pit of the stomach, vomiting of bile, scanty high-colored urine, skin and eye deeply yellow, cramps, and occasionally convulsions. "The fever assumed both an intermittent and remittent type; in more severe cases, hot acrid excretions, distressing hiccough, with anxious countenance and low muttering delirium, dryness of the tongue and fauces, black vomiting and convulsions, quick and weak pulse." The jaundice was so marked, and other bilious symptoms were so regular attendants of the disease, that it was considered to be genuine "Yellow Fever." The reports of the two epidemics were carefully considered by the Sanitary Commission, and suggestions for preventing a recurrence of the sickness were made for the consideration of the Maharajah to whose State the jail belongs.

How far the same fever prevailed among the free population of Jeypore has not been ascertained, but it was undoubtedly among them, and the facts form an important addition to the interesting statement above quoted from Dr. Kilkelly's report. The prevalence of the same fever in Western Malwa and the Pahlunpore District will be referred to in the next section.

Effects of Quarantine in Agra Central Prison.

116. One more example of the practical value of sanitary precautions in preventing the spread of epidemics is taken from the Annual Report of the Agra Central Prison, and it is of all the more value when it is remembered

to what lamentable extent this jail suffered in previous years. Dr. Moir, the Superintendent, thus writes—"Immunity from the contagious form of fever, which for five years previously has hung about the jail, is mainly to be ascribed to absence of over-crowding, together with a careful system of quarantine instituted early in January. All new comers from a distance and all suspicious cases were rigorously kept apart, outside the gate, under observation for various periods, and several bad cases of fever which, be it observed, was raging in the city and district, were treated in tents outside the main gate. All necessary precautions as to clothing, bedding, &c., were attended to, and disinfectants were freely used, with the gratifying result that now a whole year, the first for five in succession, has elapsed without an epidemic visitation of fever."

Contagious fever in 1866.

117. Such facts are all the more striking when the jails in which these precautions have been adopted with such success are compared with others where either they were not adopted at all, or where this insidious fever escaped the vigilance of even most careful and pains-taking officers. The epidemics of contagious fever which have taken place in the Lucknow, Umballah, and Allahabad Jails during 1866 are full of instruction. They corroborate in a remarkable manner the truth of all that was written by the Sanitary Commission regarding this fatal disease, and illustrate the urgent necessity which exists for the strictest observance of such rules as were recommended. In the Lucknow Central Jail over 200 prisoners were carried off by this disease in the months of January, February, and March, and it was only when the prisoners were removed from the infected locality, and when the sick were carefully separated, that any amendment took place. The measures which were adopted for checking the epidemic not only have been successful in eradicating the disease, but the prisoners latterly have enjoyed in camp an amount of good health which had been little known among them before.

Cause of Contagious Fever.

118. To what cause is the appearance of this contagious fever to be attributed? On this point three opinions have been entertained; first, that the disease was entirely the result of over-crowding; secondly, that the poison, although originally of malarious origin, under bad sanitary conditions becomes of a specific character, and capable of propagation from man to man; and thirdly, that the disease is from the outset of a specific character, and is dependent on a peculiar poison as much as small-pox or any other disease, the contagious nature of which is unquestioned. Much has been written to prove that in many instances this disease has been generated by over-crowding, but without dogmatizing on the question, whether it is possible for over-crowding of human beings to *originate* this fever, it is sufficient to state that in every case in which this was assigned as the cause, there was a want of evidence to support the opinion. In many instances the evidence which was available was sufficient to show that the disease could not have been due to over-crowding, and that the true solution must be looked for elsewhere. Moreover, as has been incidentally mentioned, the same fever has prevailed with fearful violence among the free population, among the inhabitants of villages and rural districts, where the theory of over-crowding altogether fails to account for its appearance. There has been, it is true, no more fruitful cause of sickness and mortality among the prisoners

of Indian jails than insufficient space, but although over-crowding has much to answer for, there is no evidence to show that it can produce a contagious fever, although if the poison be within the jail walls, the more the prisoners are huddled together, the more will be its victims, the more intense will the poison become, and the more favorable the circumstances for its spread. It is of the highest importance to avoid over-crowding, but it is equally important to bear in mind that this is not the only evil to be avoided, and that every sanitary precaution must be attended to with scrupulous care.

But it has been urged that although over-crowding may alone be insufficient to originate this fever, it is quite enough to convert what was at first but an ordinary malarious fever into a specific contagious disease. It is not necessary to discuss the question whether such a change of one disease into another is possible. Suffice it to say that in all the epidemics the histories of which were considered by the Sanitary Commission, there was no evidence whatever in support of such an opinion. Although less prevalent and therefore causing less mortality at the commencement of the outbreak than it did when it became more widely spread, the first case of the disease was as well marked and as fatal as any that occurred afterwards; although occurring, as they frequently did, along with many cases of the ordinary fever, they too often escaped notice as a separate disease, and were regarded as but aggravated forms of the more prevalent sickness.

If these two opinions be set aside as insufficiently supported by facts, the last manner of accounting for the disease must be considered as that which is probably correct—that the fever is from the first a specific poisonous disease, not generated by over-crowding, not transformed from an ordinary malarious disease under any adverse sanitary conditions, and that its appearance in our jails is due to its importation from without.

119. In support of the view as regards the origin of this fever which has been here stated, the following extract is given from the orders of the Punjab Government on the Annual Jail Report of that Province for 1864:—

"His Honor is clearly of opinion that the causes specified are not the originating causes of these epidemics. The theory that they were generated by over-crowding and insufficiency of diet and clothing appears to His Honor to be inconsistent with the fact that 18 gaols out of 26 have been singularly healthy, out of which some, for instance the gaol at Shahpore, were more crowded than those which were attacked.

"Again, it appears that of the 8 gaols attacked, 3 were not over-crowded even according to the new scale of cubic space declared to be requisite for each prisoner, as may be seen from the subjoined Table":—

Opinion of the Punjab Government.

JAILS.	Number of Prisoners admissible according to new scale of 648 cubic feet per Prisoner.	Number in Prison.
Rawul Pindee...	811	755
Mooltan	669	667
Umritsur	559	540

And even in the case of gaols in which the number prescribed under the new calculations was exceeded, it was not much in excess of the gaol's capabilities :—

Lahore Central Gaol	1,612	1,649
Delhi	241	288
Female Penitentiary	155	167
Goojranwala	325	328
Umballa	796	857

Again, from a reference to former reports, it would appear that the gaols at Lahore, Umritsur, and Rawul Pindee were, during the past year, considerably less crowded than they were during years when they were comparatively healthy.

Lahore Central Gaol.

Year.	Number of Prisoners.	Mortality.
1854	1,791	4·13
1855	1,847	3·08
1858	1,784	3·64
1861	2,100	3·19
1864	1,649	11·03

Rawul Pindee Gaol.

1857	885	6·20
1858	935	4·81
1861	751	1·59
1864	755	7·67

Umritsur Goal.

1854	837	4·77
1855	800	2·49
1857	720	6·66
1858	646	4·09
1864	540	14·25

" Under these circumstances, His Honor has little doubt that these diseases are introduced into our gaols from without : in the case of the Umritsur Gaol, at all events, it is known that a most malignant and fatal fever has been long prevailing in the district, with results probably little less destructive than in

those of our gaols in which mortality has been rifest. In this view of the case, he considers that our efforts should not only be directed to the improvement of the general health and stamina of prisoners, but to the prevention of the entrance of epidemic or infectious diseases. Particular attention and enquiry should therefore be directed to the existence or otherwise of infectious diseases in the district; if such diseases do exist, strict precautions should be taken in regard to admitting newly convicted prisoners into barracks or wards already occupied, by establishing quarantine-wards where each newly convicted prisoner should be kept for a certain number of days before being allowed to mix with other prisoners, or other similar measures. He is further of opinion that no Central Gaol should be the receiving gaol for newly convicted prisoners, in order that the chance of introducing infectious diseases, which of course rage more fiercely where large numbers are congregated, may be reduced."

Umballah Epidemic of 1866.

120. If any further facts are required to prove the justice of this view, they are to be found in the experience of the epidemic of fever which has prevailed among the Umballah prisoners during the current year—"On examining the jail records," writes Dr. Bateson, the Superintendent, "and looking for a continued period when the prisoners did enjoy good or average health, I found that for the whole twelve months from January to December 1863, the prison was remarkably free from unusual sickness, and throughout this period the population of the jail was almost continually above that which was inhabiting the prison when the recent epidemic broke out. This, indeed, so much so, that for the year the average sleeping superficial space per prisoner was in the dormitories 34½ feet. It is difficult to reason that the recent epidemic could have originated from over-crowding with 44½ feet superficial area per prisoner, when for a whole twelve-month in 1863 the prisoners had each less superficial area by 10 feet, and had no unusual sickness whatever. The prison with a larger population for all 1863 had no epidemic, and with a population less than that of 1863 had an epidemic in 1866. On these data I say it is difficult to bring it home to one's belief that over-crowding originated the recent fever. Thus I may be permitted to state that over-crowding did not bring about the sickness of last March and April in this prison. If 34½ feet superficial space per prisoner during a twelve-month will not produce an epidemic of fever, much less can 44½ feet for three months, and more space than this previous to the three months, produce it." But if this fever was not originated by over-crowding, to what was it due? How did it happen that while on the 15th February 1866, the sick list was almost *nil*, during the first half of March nearly a hundred prisoners had been attacked with it? The explanation is full and complete. On the 5th December 1865, a gang of 30 prisoners was despatched from the small jail at the neighbouring station of Kurnaul to be transferred to the prison at Umballah. Immediately on their arrival, two of the party were taken ill with fever and jaundice, and one died in four days. The men were believed to be suffering from inflammation of the liver, and it was not until a few weeks after, when the epidemic broke out, that their history attracted attention and led to enquiries being made regarding the sanitary condition of the Kurnaul Jail. It then appeared that fatal cases of the same disease had occurred there in the same month in which the gang in question was

transferred to Umballah. The importation of the fever again into the Kurnaul Jail was distinctly traced to a gang of thieves brought in from a particular village, among the free population of which it was reported to have existed. The proof of direct importation of the disease from without could hardly be more complete, nor could its dangerous and insidious nature well be more strikingly illustrated. The Umballah Jail is one of those which has suffered most severely from this contagious fever. Both in the recent epidemic and also in that of 1864, it can be proved beyond all doubt that the disease was introduced into the prison, and not originated within its walls.

The facts of all these epidemics wherever they could be ascertained have been in favor of this view, and it is also strongly supported by the experience of those jails already alluded to wherein the epidemic has been to all appearance by good management prevented. Much remains to be learned concerning the disease, but having regard to the lamentable mortality which it has of late years occasioned among the prisoners in Northern India, no Officer in charge of a jail can err in being too careful and too suspicious lest the dreaded visitor obtain access within the walls. All the jails in which quarantine is reported to have been carried out with such excellent results during 1865 had suffered from this fever most severely in previous years. There is, therefore, every reason to hope that the disease which has contributed so largely to the mortality of prisoners may almost entirely be prevented by proper sanitary precautions.

Small-pox.

121. Out of the whole jail population of the Presidency, amounting to an average daily strength of 54,337, there have been only 223 cases of small-pox and 23 deaths; but while the number is little more than one-half what it was in 1864, the proportion of fatal cases has been double.

The following Statement shows the distribution of, and deaths from, the disease during the two years :—

STATEMENT XLIII.

Year.	Bengal Proper and Assam.		Dinapore, Benares, Oude, and Cawnpore.		Nagpore and Central India.		Agra, Meerut, and Rohilcund.		Punjab.		Bengal Presidency.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
1864 ...	520	6	33	3	9	1	7	...	6	...	575	10
1865 ...	140	17	48	4	26	1	5	...	4	1	223	23

In the Hazareebaugh Jail alone did the disease prevail. Of the 140 cases returned in the Bengal Province, nearly 100 occurred here, but the disease was of a very mild character, as there was no death, nor was pitting of the face observed in a single instance. There is indeed reason to believe that many of the cases returned as small-pox would have been more properly entered as *chicken-pox*, Of the 23 deaths recorded under *variola*, no less than 17 occurred in the jails of Bengal Proper and Assam, 4 occurred among the prisoners in the second group, leaving only 2 deaths from this cause in the three other provinces.

122. Cases of heat apoplexy occurring among the prisoners are noted in several of the Annual Reports, but as the Tables do not distinguish between this and ordinary forms of apoplexy, the precise number of each cannot be stated. The 27 cases, however, noted as having proved fatal in the months of May, June, and July may, with tolerable accuracy, be all ascribed to the great heat. *Coup de soliel* among Natives of India is rare, and was doubtless caused by the very exceptional nature of the season. It is difficult on this subject to obtain any reliable data, but in many parts of the country the rains were unusually late in appearing, and any meteorological observations available support the general belief that the year was one of very trying, unusually great and protracted heat. The information given by the Superintendent of the Mooltan Jail of the climate of 1865 at that station is interesting. "The climate of the season," writes Dr. DeRenzy, "has been very exceptional. The mean temperature of the whole year was 79·12F; that of the three preceding years being, for 1862, 77·12F, for 1863, 76·70, and for 1864, 76·91. But the most remarkable variation of the climate from the standard of former years occurred in the months of April and May. The mean temperature of these months in the last four years has been as follows:—

Unusual heat of the year.

April	1862 ...	...	81·5	May	1862 ...	...	88·8
„	1863 ...	...	83·8	„	1863 ...	...	88·7
„	1864 ...	...	79·1	„	1864 ...	...	86·47
„	1865 ...	...	88·42	„	1865 ...	...	97·95

So that the mean temperature of May has been more than nine degrees higher than that of the same month in the hotest of the three preceding years. The rain-fall was below the average. The total amount collected in the last four years was as follows:—

1862	...	...	7·93 inches	1864	...	...	6·29 inches
1863	...	...	13·75 „	1865	...	...	5·64 „

But of this very scanty fall 2·32 fell in February, a month usually very dry. The total fall in the first four months of the year was 4·09, so that in the other eight the total fall was only 1·55. In July, usually the month of greatest fall, 0·20 inches only were collected. The weather consequently was most oppressive in that month and heat apoplexy very prevalent among European and Native residents. The season was the most trying I have ever experienced". Although this description strictly applies only to Mooltan, it has been quoted as exhibiting the general character of the past season in the Upper Provinces.

123. If the several groups of jails be arranged according to their comparative healthiness during the year, that including Meerut, Rohilcund, and Agra will take the first place, the rate of deaths per 1,000 strength having been 33·15. Next and nearest in order will come the Punjab, having a ratio of 34·92. Bengal Proper and Assam come next, with a ratio of 58·85; then follow Behar, Benares, and Oude, with a ratio of 67·67. The two last are each nearly double of the two first. And lastly, Nagpore and Central India, with the excessive rate of 104·77 per 1,000, or more than three times what it was in either the Rohilcund or Punjab Province.

Comparison of the different groups.

Comparison of individual jails.

124. If individual jails are considered, it is necessary to discard those in which the number of prisoners has been too small to form the basis for calculations. Some of these present a remarkably low rate of mortality, while in others the rate has been as remarkably high.

Of all the larger jails in the country, the Lucknow Central Prison has been the most unhealthy. In it there were during the year no less than 466 casualties, a number sufficient to raise the death-rate of the group of jails to which it belongs from 46·64 to 67·67. If we compare the statistics of this prison with that of all the jails containing an average of 1,000 prisoners and upwards, the result is as follows:—

STATEMENT XLIV.

Name of Jail.	Average Strength.	Number of Deaths.	Ratio of Deaths per 1,000 Strength.
Alipore	1,811	127	70·13
Benares	1,193	47	39·40
Allahabad	2,346	57	24·29
Agra	1,830	65	35·52
Bareilly	1,697	95	55·98
Meerut	1,242	24	19·32
Lahore	1,964	90	45·82
Lucknow	2,619	466	177·93

And yet there were no deaths from cholera nor contagious fever among the Lucknow prisoners. Diarrhœa and dysentery, atrophy and anœmia, are the chief diseases noted. The prisoners, as a body, were doubtless in a very low and unsatisfactory state of health; very many of them suffered from sloughing of the cornea and lost their sight. The state of the Lucknow Central Prison has been unsatisfactory ever since its establishment, and the death-rate excessive. During the current year, as has been seen, contagious fever has already carried off more than 200, but the disease has been arrested, and the measures which have been adopted to prevent over-crowding, and to introduce other sanitary improvements, must be attended with the best results.

Improvement in Returns of larger jails.

125. It has been shown that the year 1865 presents a favorable contrast as regards the sanitary condition of the prisoners with any year since 1859. Further detailed statistics which have been obtained regarding some of the larger jails show two important facts—first, a steady marked diminution in the amount of mortality, and secondly, that where this improvement has been broken, the increase of sickness and mortality has been due, at least in the Upper Provinces, to the invasion of contagious fever. The following Tables illustrate the comparative condition of the Meerut and Agra Central Prisons

during the last six years. There can be little doubt that these gratifying results are due in great measure to improved sanitary arrangements :—

STATEMENT XLV.

Agra Central Prison.

Year.	Average number of Prisoners.	Daily average Sick.	Total number of Deaths.	Percentage of Sick to Strength.	Percentage of Deaths to Strength.	Number of Deaths from Cholera.
1860	2080·5	225·8	638	10·8	30·6	175
1861	2688·	74·0	199	2·7	7·4	67
1862	2541·	112·3	133	4·4	5·2	12
1863	2409·	127·8	257	5·3	10·6	45
1864	2250·4	139·7	432	6·2	19·1	.....
1865	1918·7	21·11	68	1·1	3·5	20

STATEMENT XLVI.

Meerut Central Prison.

Year.	Average number of Prisoners.	Daily average Sick.	Total number of Deaths.	Percentage of Sick to Strength.	Percentage of Deaths to Strength.	Number of Deaths from Cholera.
1860 ...	2096·	27·98	459	1·34	21·89	...
1861 ...	2151·58	63·56	1,430	2·95	66·46	379
1862 ...	1341·74	34·01	151	2·53	11·25	...
1863 ...	1383·12	26·84	53	1·94	3·83	...
1864 ...	1419·73	18·58	52	1·30	3·66	...
1865 ...	1241·43	12·26	24	0·98	1·93	...

The admirable management of the Futtehgurh Jail ought not to pass without notice. Out of a daily average of 432 prisoners, there was not a single casualty during the whole year. In 1864, out of a strength of 404, there were no less than 64 deaths, or a ratio of 158·42 per 1,000. The prisoners were in fact more than decimated by contagious fever, and there can be little doubt that, but for the precautionary measures which have been already described, the mortality of 1865 would in all probability have been as high as that of its predecessor. The comparison of the two years affords strong ground for hope that much of the disease which has prevailed among our prisoners is preventable, and that with improved sanitary administration, it will gradually and materially diminish.

Space to be allotted to each Prisoner.

126. The order of the Government, that in future every prisoner in jail is to have at least 648 cubic feet and 36 superficial feet of space, is a great advance in sanitary improvement, and must be attended with the best results. Much of the sickness and mortality of previous years was undoubtedly

due to the fact that, although the prisoners had a fair ration of food, they were unprovided with a full supply of fresh pure air. Much of the dysentery and diarrhœa which have proved so obstinate and so little amenable to treatment, and to which so much of the sick and death-rate of every jail has been due, appears to have been but the manifestation of a system weakened and impoverished by improper sanitary conditions. Many of the jails, especially in Bengal Proper, still contain more than the regulated number of inmates, and it is to be hoped that provision may be soon completed whereby each inmate may have the full space allotted to him by the Government.

Drainage.

127. One sanitary requisite in which many of the jails are still deficient is proper drainage. In many the levels never appear to have been taken, and the grated outlets which, even had they been placed in the proper situations, would have afforded but imperfect exit to the water, have been introduced into the wall here and there, and not unfrequently in such a way as to be useless. There is no more essential point in securing the health of the prisoners than to see that the drainage is perfect, or at least as perfect as the natural difficulties of the site will allow. It is not enough that the rain should disappear within a few hours of its fall; but considering that the barrack floors are generally so little raised above the level of the ground, it is very necessary that it should run off at once. The experiment of introducing sub-soil drainage into jails is worthy of trial. With prison labor the expenditure would be trifling, and were the results encouraging, the plan might with advantage be adopted in military cantonments.

Dr. Stewart Clark's raised berths.

128. In connection with drainage and the importance of avoiding damp, the very excellent raised berths designed by Dr. Stewart Clark, Inspector General of Prisons in the North-West Provinces, deserve special mention. The difficulty of providing a good sleeping berth for prisoners, not open to objection, was admitted by the Jail Committee of 1864. "That sleeping on the ground is unhealthy," they remark, "is not doubted. That it would be highly desirable that the prisoner should sleep in such a manner as to be elevated above the exhalations of the earth is admitted by all. But considerable difficulties exist in the way of devising a plan which should effect the object without facilitating the escape of the prisoner or supplying him with the means of offence. Some of our colleagues are strongly opposed to the introduction of charpoys or wooden beds of any kind under the idea that they could be broken up or employed to assist in scaling walls. It is thought that the iron bars used to secure doors and windows could be easily snapt asunder by such leverage as a strong bamboo or part of a plank would afford. During the mutiny a disarmed regiment of sepoys supplied themselves with rude weapons by breaking up their charpoys. On the other hand, mattrasses stuffed with straw were objected to as likely to become damp, sodden, and filthy, and to be used as receptacles for hiding different articles; whilst to raised earthen bed-shaped mounds, in Bengal at least, the same objection would exist as to the ground itself, namely, that they would be damp and cold, and give out malarious exhalations. Without, therefore, being able to settle a definite plan, we still think it right to record our recom-

mendation—that it is of great importanee that prisoners should not sleep on the ground itself, but be raised above it, provided some method could be adopted for securing this object without providing facilities for offence and escape." The above quotation from the Jail Committee's report well states the extreme desirability of providing the prisoners with raised sleeping berths, and at the same time the difficulty of doing so if all the required conditions are fulfilled. But the berths devised by Dr. Clark meet every requirement considered necessary by the Jail Committee. They remove the prisoner from the ground without facilitating his escape and supplying him with the means of offence. They are clean and dry and eannot be used as receptacles for hiding forbidden artieles. Moreover they greatly inprove the ventilation around the sleeping prisoners; they ensure the individuals being kept quite distinet and apart from one another, and point out exactly the proper number of inmates each barrack ought to contain. They eonsist of raised arches eonstrueted entirely of sun-burnt bricks and mud mortar, 2 feet in breadth on the top, and sloping in height from 1 foot 10 inehes at the head to 1 foot 7 inches at the foot. "The cubic amount of atmospheric air displaced by a given number of these berths is less," Dr. Clark remarks, "by about one-fifth than by the continuous elevated mud sleeping plaees in general use." The Sanitary Commission pronounced them to be a very important improvement in jail management, and believed them to be so admirably adapted in every respect for the use of prisoners, that they strongly recommended their introduction into all the jails of the Bengal Presideney.

Dry earth conservancy.

129. The dry earth system of conservaney has been in operation during the year, and more than one Medical Officer has ascribed the improved sanitary eondition of the prisoners in great part to its successful action. The additional experienee whieh has been gained during the past year tends only to confirm the favorable reports whieh were formerly reéeived, and there ean be little doubt that Mr. Moule's system of dry earth sewage is one of the most valuable eontributions to practical sanitation and is partieularly well adapted for jails. Its superiority over the surface system, and over Dr. Hathaway's system, is undoubted. The latter, it must be admitted, was exeellent and by far the best system which had been previously aeted on, but it did not recognize the deodorizing power of dry earth, and on that rests the superiority and indeed the whole value of Mr. Moule's system.

An interesting series of experiments has been undertaken during the past year in many of the jails to test not only the deodorizing power of dry earth when mixed with human exereta, but also the permanence of the deodorization. In a letter addressed to the Commission, Dr. Mouat, Inspector General of Prisons in Bengal, expressed his opinion that the Agra and Punjab Jail fevers were "nothing more nor less than the fevers of filth and putrid exhalations, aggravated, doubtless, but in no degree eaused by, or primarily due to, overcrowding, or to any other eondition ordinarily found in the jails of the North-Western Provinces and Punjab. If with better eonstruction of buildings, more space, and greater attention to all details of prison management at Agra and Lahore, a destructive form of contagious disease arises which is unknown in the inferior jails of Bengal, to what can it be really due? There is one con-

dition that has not hitherto existed in Bengal, which seems to me to be deserving of the most careful enquiry as to whether it is or is not responsible for any portion of the mischief. For many years it has been the practice in the Punjab, and may have been so at Agra, for aught I know, to bury the ordure of the prisoners in trenches in the jail garden; so far as I know this ordure has not been so deodorized as to prevent the occurrence of subsequent putrefactive fermentation." With a view to answer this enquiry, the Sanitary Commission addressed the various Local Governments and Administrations in order that a series of experiments might be undertaken. Several of the reports have been received, and although there is considerable discrepancy in the results, due doubtless to the particular climate in which, and the particular kind of soil with which, the experiments were carried out, there is a general testimony to the fact that the deodorizing power of dry earth is permanent, and that human excreta so treated, after being buried in moderately deep trenches, are without offence, while the benefit of the manure to the garden is undisputed. Further experiments are being carried on to settle points which have appeared doubtful, and additional reports embodying the results of these experiments are now awaited.

But even if the facts as to the permanent deodorizing power of dry earth which have been so far ascertained were different from what they are, Dr. Mouat's theory of the origin of the contagious fever appears to rest on an insufficient basis. So far as is known, the form of fever, which appears to be originated by effluvia from decaying excreta, is a fever known in Europe as typhoid, and characterized by ulceration of particular glands in the intestine, but the fever which has prevailed and proved so fatal in the jails of Upper India, as a rule, presents no such lesion, and many of those Medical Officers who have had most experience of it, have never met with the characteristic ulceration in a single instance. It is important that this contagious fever, which has been spoken of frequently as typhoid, in consequence of the marked depression of the vital powers, should not be confounded with the typhoid or enteric fever of Europe.

Prison Statistics of Sickness and Mortality.

130. In last Annual Report the difficulty of arriving at a satisfactory conclusion with regard to prison statistics of sickness and mortality was alluded to, and a suggestion was made that the opinion of the War Office Commission should be obtained on the subject. In the Annual Returns for 1865, the Government acted on a memorandum by the Sanitary Commission, and called for additional information, especially as regards the average duration of imprisonment of those who had been in jail during the year. Difficulties having, however, arisen as to the manner in which the average duration of imprisonment ought to be calculated, it was resolved to require this information only as regards the prisoners who died during the year and regarding those who remained in jail at its close, leaving more detailed calculations until the opinion of the War Office Commission had been received. Whatever form of jail statistics may ultimately be adopted, and there appear to be great objections to every method which has been as yet suggested, it is very important that in addition to the new form of returns, the information which has hitherto been supplied should also be given. Without it all comparison with former years will be impossible, and the statistics of jails which have been accumulated will become almost valueless.

Rules for the prevention of Epidemics.

131. In addition to offering an opinion and suggestions on the best means of arresting excessive sickness and mortality in individual jails during 1865, the Sanitary Commission, by direction of the Government, prepared a complete set of rules, with a view to arrest the spread of sickness among prisoners, and thus as far as possible to prevent the recurrence of epidemics which have proved so frequent and fatal. These rules were recommended for the guidance of every Medical Officer in charge of a jail. Every disease which is likely to spread among the prisoners is there discussed, and the measures which ought in each case to be adopted are clearly pointed out. To Officers in charge of jails, it is believed that they will be of great service, and especially to those who have had but little Indian experience. There can be no more trying situation for a Medical Officer than the charge of a large body of prisoners among whom serious epidemic sickness makes its appearance. European experience, however extended, can here be of but little practical utility, and it is therefore indispensably necessary that a simple guide should be provided showing the measures which ought to be adopted, without hesitation and without delay. The rules which have been drawn up by the Commission, and which have been approved of by the Government, clearly lay down all that is required, and the strict observance of them will, it is hoped, be followed by a very marked diminution in jail sickness and mortality.

Jail mortality from 1859 to 1865.

132. The statistics of the jails in the Bengal Presidency during the past seven years, present a very interesting and instructive lesson. The following statement which has been compiled by Dr. Bryden shows the total deaths which have occurred from the year 1869 to the year 1865, the mortality from each cause in the different groups of jails, and also what per-centage of the total deaths is to be ascribed to each disease. An average annual mortality of 80·77 per 1,000 is doubtless lamentably high, but in endeavouring to arrive at a correct estimate of the figures contained in this statement, it must be remembered that the statistics of sickness and mortality among prisoners cannot legitimately or fairly be compared with the statistics of the Native Army. The floating nature of the population of a jail, the great age of many of its inmates, and the impoverished and unhealthy condition in which so large a proportion of them is admitted, all preclude the possibility of making any just comparison between prisoners and a body of men who are not recruited except in perfect health, and who cease to be borne on the strength, as soon they become old, and unfit for the proper discharge of their duties.

STATEMEN

Deaths of the Jail Population of the Bengl

Causes of Deaths.	1.—Bengal Proper and Assam.								2.—Behar, Benares, Oude, and Cawnpore.							
	1859.	1860.	1861.	1862.	1863.	1864.	1865.	7 years.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	7 ye
Cholera	291	549	184	146	304	250	147	1,871	108	198	135	11	351	136	72	1,
Small-pox	10	16	2	.....	1	6	17	52	2	.....	1	2	2	3	4	
Yellow Relapsing Typhus	.....	12	.....	.....	.....	.....	.....	12	.....	270	.....	.....	.....	55	.....	
„ Sequelæ ... *Diarrhœa* ...	.....	.....	.....	.....	.....	.....	.....	.....	.....	138	.....	.....	.....	.....	.....	
„ Sequelæ ... *Atrophy* ...	.....	.....	.....	.....	.....	.....	.....	.....	.....	10	.....	.....	.....	.....	.....	
Fevers, Malarious and Non-Specific ...	73	78	71	83	68	54	76	503	122	73	82	82	86	92	176	
Dysentery and Diarrhœa	782	873	615	597	711	390	352	4,320	541	394	463	448	740	560	639	3,
Ophthalmia	3	1	1	4	.....	.....	2	11	13	3	6	3	32	11	40	
Carbuncle	1	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....	.....	1	.....	
Erysipelas	2	.....	3	1	1	.....	2	9	.....	.....	1	1	.....	8	1	
Gangrene and Phagedœna	1	2	4	1	6	3	2	19	1	7	6	.....	5	2	5	
Ulcer	6	2	1	1	5	2	7	24	9	19	8	19	10	11	6	
Pyœmia	1	1	.....	.....	1	1	.....	4	.....	.....	.....	.....	.....	.....	.....	...
Hydrophobia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	
Rheumatism	5	3	5	3	3	2	3	24	6	10	7	5	6	6	8	
Syphilitic Cachexy	1	.....	4	3	1	2	.....	11	1	2	.....	2	1	2	1	
Leprosy	3	7	4	1	4	3	4	26	1	3	4	1	3	2	2	
Elephantiasis	1	.....	1	.....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	...
Scurvy	4	8	6	4	.....	.....	4	26	13	7	4	6	1	2	.....	
Anœmia and Atrophy	91	75	48	34	34	41	23	346	33	48	30	25	38	19	21	
Dropsy	62	70	43	50	61	45	31	362	12	10	19	14	7	4	6	
Cancer	1	1	2	3	1	2	2	12	.....	.....	.....	.....	.....	1	.....	
Scrofula	2	.....	1	.....	1	2	.....	6	.....	.....	1	.....	2	1	1	
Phthisis Pulmonalis	97	86	72	73	64	49	42	483	21	18	6	8	13	26	9	
Hæmoptysis	2	1	2	4	5	1	4	19	1	1	.....	2	1	1	.....	
Meningitis and Encephalitis ...	1	.....	6	1	3	1	3	15	.....	1	.....	2	4	3	1	
Apoplexy	16	10	7	13	4	9	15	74	10	16	14	6	5	12	15	
Paralysis	5	3	2	2	4	4	2	22	7	2	8	4	.....	5	2	
Epileps	.....	5	3	2	1	1	1	13	3	3	.....	2	3	2	1	
Tetanus	1	5	1	.....	2	.....	1	10	.....	1	1	1	2	2	1	
Mania and Dementia	2	4	2	2	1	1	3	15	3	5	2	2	4	5	.....	
Pericarditis	5	2	6	1	3	3	.....	20	.....	.....	.....	.....	.....	.....	1	
Heart Disease	2	4	3	2	2	3	9	25	2	.....	.....	.....	4	.....	2	
Aneurism	.....	.....	.....	.....	1	1	.....	2	.....	.....	.....	.....	.....	.....	.....	...
Laryngitis	1	.....	.....	.....	.....	.....	1	2	.....	.....	.....	.....	.....	1	2	
Bronchitis	17	15	16	13	14	7	10	92	17	15	9	12	19	11	6	
Pleurisy	13	11	15	10	6	3	4	62	1	11	8	6	5	1	1	
Pneumonia	53	46	40	44	39	34	42	298	26	18	14	12	30	14	11	
Gangrene of Lungs	6	4	2	2	.....	.....	.....	14	.....	.....	1	1	.....	.....	.....	
Asthma	6	5	2	6	4	3	5	31	3	5	5	9	8	2	5	
Ileus	.....	.....	.....	.....	1	.....	1	2	.....	.....	1	.....	3	1	1	
Gastritis and Enteritis	5	3	2	4	5	4	3	26	2	4	1	4	1	.....	1	
Peritonitis	4	6	5	1	4	4	4	28	2	.....	2	.....	.....	1	3	
Hernia	1	1	.....	1	2	1	.....	6	.....	.....	.....	.....	.....	.....	.....	...
Dyspepsia	5	5	1	3	1	.....	.....	15	2	1	.....	.....	1	2	.....	
Spleen Disease	3	5	7	10	12	7	15	59	4	6	8	6	4	9	.....	
Hepatitis	4	10	9	5	5	8	11	52	4	1	2	1	.....	1	4	
Jaundice	4	2	1	.....	.....	.....	1	8	3	3	.....	2	1	2	1	
Hæmatemesis	.....	2	1	.....	1	.....	.....	4	.....	.....	.....	.....	2	.....	.....	
Melœna	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...
Hæmaturia	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	
Nephritis	.....	4	1	1	2	1	1	10	1	.....	.....	1	7	5	2	
Cystitis	.....	2	.....	.....	1	.....	1	4	.....	1	.....	.....	1	1	1	
Abscess	6	2	2	6	2	.....	4	22	4	11	3	3	12	6	4	
Injuries	9	6	7	10	7	6	14	59	12	9	11	7	7	5	19	
Deaths returned probably under the head of the cause of original admission into Hospital	7	4	10	8	1	5	4	39	3	7	3	5	9	2	28	
Total Deaths of each year ...	1,615	1,951	1,220	1,155	1,399	959	873	9,172	994	1,331	867	715	1,431	1,037	1,104	7
Average Strength of Prisoners ...	15,359	14,335	13,924	14,692	15,087	14,441	14,598	14,634	8,605	9,511	11,398	13,975	14,664	15,450	16,326	12
Death-rate per 1,000	105·15	136·10	87·69	78·61	92·73	67·10	58·85	89·54	115·51	140·15	76·07	51·31	97·73	67·57	67·67	8

VII.

sidency for the Seven Year Period 1859 *to* 1865.

3.—Nagpore and Central India.							4.—Agra, Meerut, and Rohilcund.							5.—Punjab.							
1860.	1861.	1862.	1863.	1864.	1865.	7 years.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	7 years.	1859.	1860.	1861.	1862.	1863.	1864.	1865.	7 years.
80	12	25	50	63	143	374	...	177	395	17	46	...	22	657	1	...	48	93	...	1	2	145
...	...	...	4	1	1	6	...	3	.....	...	...	...	...	3	.....	1	.....	.....	...	...	1	2
...	...	...	46	33	90	169	33	474	560	434	356	360	52	2,269	... ..	...	319	237	272	508	192	1,528
...	...	...	...	...	...	.....	103	237	343	137	...	...	...	820	.....	...	176	30	...	75	.....	281
...	...	...	...	...	...	.....	70	118	71	...	...	...	...	259	.....	...	10	.....	48	35	.....	93
55	28	39	24	24	33	288	68	41	26	30	15	27	28	235	72	48	51	60	45	24	36	336
100	73	98	171	110	153	858	188	82	175	68	147	65	82	807	86	84	114	99	145	64	51	643
1	1	...	...	1	...	5	5	1	7	1	...	...	...	14	2	3	4	.....	2	1	.....	12
...	1	...	...	...	...	1	...	1	.....	...	...	...	...	1	.....	...	.....	.....	1	1	.....	2
...	...	...	1	2	...	3	...	2	3	3	1	2	...	11	.....	1	1	.....	5	5	.....	12
1	...	1	...	...	...	5	...	.....	5	2	2	...	...	9	1	...	5	2	4	...	1	13
8	2	...	2	4	6	36	6	2	26	6	2	9	...	51	4	...	3	4	4	3	.....	18
...	...	...	...	...	...	.....	...	.....	.....	...	1	...	...	1	.....	...	.....	.....	...	...	.....	.....
...	...	...	1	...	...	1	...	.....	.....	...	...	...	...	.....	.....	...	.....	.....	...	...	.....	.....
7	1	1	3	2	5	38	1	.....	2	2	1	...	...	6	6	3	6	3	4	4	2	28
...	1	1	1	...	...	3	1	1	.....	...	...	2	1	5	.....	...	2	3	...	2	.....	7
1	1	...	...	...	2	6	1	.....	2	1	2	1	...	7	1	2	1	.....	3	...	.....	7
...	...	...	...	...	...	.....	...	.....	.....	...	...	...	...	.....	.....	...	.....	.....	...	...	.....	.....
4	13	4	...	1	4	36	...	.....	1	1	1	1	...	4	2	4	10	5	6	2	.....	29
24	7	11	9	11	54	141	44	16	25	31	23	25	16	180	10	8	21	14	5	10	11	79
4	5	4	2	...	1	25	5	6	3	4	2	2	1	23	.....	...	6	2	6	1	4	19
1	...	...	...	...	...	1	...	2	.....	...	...	1	...	3	.....	1	1	.....	...	1	.....	3
...	...	1	...	1	...	2	...	.....	1	...	...	...	1	2	1	1	1	.....	1	1	.....	5
3	3	1	5	2	4	22	12	19	18	9	14	3	9	84	5	7	1	3	6	8	6	36
...	...	...	...	...	...	.....	1	.....	1	...	...	...	...	2	.....	2	.....	.....	1	...	.....	3
...	...	...	...	1	...	1	1	1	1	2	3	...	1	9	.....	...	3	.....	2	1	1	7
2	1	1	4	...	3	12	1	4	4	5	...	3	8	25	2	2	6	1	8	9	17	45
...	2	1	1	1	...	7	1	6	2	1	...	...	...	10	.....	...	1	2	1	...	.....	4
...	...	...	...	...	3	4	1	1	.....	2	1	1	...	6	1	...	1	1	1	2	1	7
...	...	1	...	...	...	1	...	.....	2	...	...	2	...	4	1	1	2	2	1	...	1	8
6	1	2	5	2	...	21	5	8	6	3	2	1	1	26	1	...	1	.....	1	2	.....	5
...	...	...	1	...	1	2	...	.....	.....	...	...	...	...	.....	1	...	4	3	2	1	.....	11
...	...	2	1	...	...	3	...	1	3	1	2	1	1	9	3	1	.....	1	...	2	.....	7
...	...	...	...	...	...	.....	1	.....	.....	...	...	...	...	1	.....	...	.....	.....	...	...	1	1
...	...	...	1	1	...	2	...	1	.....	...	...	...	...	1	.....	1	.....	1	1	1	.....	4
5	7	5	6	7	10	55	7	23	18	10	8	6	4	76	9	8	20	13	13	9	3	75
...	2	...	5	1	1	11	2	5	2	1	...	2	2	14	5	2	4	2	5	1	1	20
5	2	4	2	4	8	37	31	32	19	17	8	10	7	124	6	16	23	10	14	21	8	98
...	...	...	...	...	...	.....	...	.....	.....	...	...	...	...	.....	.....	...	.....	.....	...	...	.....	.....
1	1	3	5	4	10	28	7	6	6	1	3	1	2	26	2	...	3	3	...	3	3	14
...	...	...	...	...	2	2	...	.....	.....	2	...	...	1	3	.....	...	1	.....	...	...	.....	1
...	...	...	...	...	...	.....	...	1	1	1	...	2	2	7	2	2	3	2	5	1	2	17
...	...	...	2	...	...	2	...	.....	3	1	1	1	1	7	.....	1	3	1	...	1	1	7
...	...	...	1	...	...	2	...	1	.....	...	...	...	...	1	.....	...	.....	.....	...	...	.....	.....
2	...	...	...	1	...	4	1	.....	4	...	1	...	...	6	.. ...	...	2	.....	...	...	.....	2
1	...	...	...	1	3	7	...	2	.....	1	...	...	...	3	2	2	4	1	2	3	3	17
1	...	1	2	...	...	6	* 4	* 8	4	1	...	1	...	18	2	2	.....	1	2	1	2	10
1	1	1	...	...	2	6	* 9	* 14	.....	3	2	1	...	29	1	1	* 3	.....	3	1	.....	9
...	...	...	...	...	...	.....	...	1	.....	1	...	1	...	3	.....	1	.....	2	...	...	1	4
...	...	...	..	...	...	.....	...	.....	.....	...	...	...	...	.....	.....	...	1	.....	1	...	3	* 5
...	...	...	1	...	1	2	...	.....	1	...	...	...	...	1	.....	1	.....	.....	...	1	.....	2
1	...	1	1	...	1	4	1	.....	.....	18	15	25	4	63	.....	...	.....	.....	...	2	1	3
...	1	...	1	...	...	2	...	.....	3	1	...	...	2	6	.....	...	.....	.....	...	...	.....	.....
1	1	1	3	...	2	13	3	4	9	3	...	...	3	22	3	3	4	6	4	5	.....	25
8	2	...	2	2	5	33	10	8	11	5	4	5	5	48	5	4	9	8	7	11	9	53
1	4	2	2	...	1	11	1	3	13	2	3	3	1	26	2	3	6	2	6	6	8	33
324	173	211	365	280	549	2,298	624	1,312	1,776	828	666	564	257	6,027	239	216	884	617	637	830	372	3,795
4,981	5,089	5,316	4,975	5,448	5,221	5,125	7,196	7,695	9,669	8,534	8,043	7,641	7,688	8,067	10,729	9,826	10,835	10,354	9,632	9,630	10,482	10,213
65·04	34·00	39·69	73·37	51·76	104·77	64·06	86·71	170·59	183·68	97·02	82·80	74·73	33·15	106·73	22·28	21·98	81·59	59·69	66·03	85·77	34·92	53·09

* Yellow Typhus.

STATEMENT XLVII.—*(continued).*

Deaths of the Jail Population of the Bengal Presidency for the Seven Year Period 1859 *to* 1865.

Causes of Deaths.	Died per 1,000 on the Average of 7 years.					Bengal Presidency.		
	Provinces.							
	1	2	3	4	5	Total Deaths of the 7 years.	Died per 1,000 of Average Strength.	Died per cent. of the Total Deaths.
Cholera	18·27	11·24	10·43	11·63	2·03	4,058	11·39	14·10
Small-pox	·51	·16	·17	·05	·03	77	·22	·27
Yellow Typhus, and its Sequelæ	...	5·26	4·71	59·29	26·61	5,904	16 58	20·52
Fevers, Malarious and Non-Specific	4·91	7·93	8·03	4·16	4·70	2,075	5·83	7·21
Dysentery and Diarrhœa	42·17	42·08	23·92	14·29	8·99	10,413	29·23	36·19
Ophthalmia	...	...	...	.....	...	150	·42	·52
Carbuncle	...	...	...	.....	...	7	.....	·02
Erysipelas	...	...	...	.....	...	46	.....	·16
Gangrene and Phagedœna	·42	1·20	1·14	1·09	·43	72	·79	·98
Ulcer						211		
Pycemia	...	...	...	.....	...	5	.....	·02
Rheumatism	...	...	...	.....	...	144	.....	·50
Syphilitic Cachexy	...	...	...	.....	...	35	.....	·12
Leprosy	·25	·18	·17	·12	·10	62	.....	·22
Elephantiasis	...	...	...	.....	...	2		
Scurvy	·25	·37	1·00	·07	·41	128	·36	·44
Anœmia and Atrophy	3·38	2·38	3·93	3·19	1·11	960	2·69	3·34
Dropsy	3·53	·80	·70	·41	·27	501	1·41	1·74
Cancer	...	...	...	.....	...	20	....	·07
Scrofula	...	...	...	.. ...	...	20	.....	·07
Phthisis Pulmonalis and Hæmoptysis ...	4·91	1·19	·61	1·52	·55	756	2·12	2·63
Meningitis and Encephalitis	1·08	1·30	·56	·78	·79	43	·98	1·21
Apoplexy						234		
Paralysis						71		
Epilepsy	...	...	...	.....	...	44	.....	·16
Tetanus	...	...	...	.....	...	31	.....	·11
Mania and Dementia	...	...	...	.....	...	88	.....	·31
Pericarditis	·20	·01	·06	.....	·15	34	09	·12
Heart Disease	·24	·09	·09	·16	·10	52	·16	·20
Aneurism	·02	...	...	·02	·01	4		
Laryngitis	1·22	1·43	2·37	1·83	1·31	12	1·50	1·86
Bronchitis						387		
Asthma						136		
Pleurisy	3·66	1·78	1·34	2·45	1 65	140	2·35	2·91
Pneumonia, and Gangrene of Lungs						698		
Ileus, Gastritis, and Enteritis	·28	·21	·06	·18	·25	77	.....	·45
Peritonitis	·27	·09	·06	·12	·10	52		
Hernia	...	...	...	.....	...	9	.....	·03
Dyspepsia	...	...	...	.....	...	33	.....	·13
Spleen Disease	·58	·41	·20	·05	·24	123	·35	·44
Hepatitis	·51	·14	·17	·32	·14	99	·28	·32
Icterus	...	..	...	.....	...	64	.....	·29
Hœmatemesis, Melœna, and Hœmaturia ...	...	...	...	.....	...	25	.....	·31
Nephritis	...	...	...	.....	...	96	.....	·09
Cystitis	...	...	...	.....	...	16	.....	·39
Abscess	·21	·48	·36	·39	·35	125	·35	·44
Injuries	·58	·78	·92	·85	·74	263	·74	·91
Deaths returned under the head of the cause of the original admission, &c.	·36	·66	·33	·44	·41	169	·47	·59
Ratio per 1,000 for causes not specially calculated above	1·73	2·98	2·73	3·32	1·62	.....	2·46	.....
	89·54	83·15	64·06	106·73	53·09	28,771	80·77	100·00

SECTION IV.

GENERAL POPULATION.

Registration of Deaths.

133. In last Annual Report it was mentioned that arrangements had been made for establishing a system of registering deaths and the causes of death among the Native Population, and thereby giving effect to one of the recommendations of the Royal Commission. It was not to be anticipated that much could be accomplished in this important matter at once, and returns, so far as they have been obtained, rather point to the difficulties which have to be encountered in carrying out this useful measure than present any reliable results. A commencement has, however, been made, and the records may be expected every year to become more and more trustworthy, as the people understand more fully the object which is in view. It will be useful to state shortly what course has been adopted under each local Government and Administration for securing the desired end.

Registration of Deaths in the Punjab.

134. In the Punjab the Police is the agency employed for the purpose. Every police station is called on to keep a register in the following form, and Watchmen, in making their usual reports at the police stations, are required to give all the required particulars regarding any deaths which have occurred since their last report.

FROM A.

Registration of Deaths among the inhabitants of the _____ Police Station.

1	2	3	4	5	6	7	8	9	10
DATE.		Village, Town, City or Mohullah.	Name.	SEX.		Age.	Caste.	Cause of death; nature of illness.	REMARKS.
Year.	Month and Date.			Male.	Female.				

In towns where there are Municipal Police, the constable of each beat must report all deaths occurring in it, the police in such cases being assisted by the sweepers of the various divisions of the town. Under recent orders, these vernacular mortuary returns received from the police stations are classified by the District Superintendent and entered in one return according to the

following form, which is to be furnished to the Deputy Commissioner by the 5th of the month following :—

Police Department. *District.*

*Deaths, arranged according to causes and ages for the Month of*_____186 .

1	2		3		4		5		6		7		8		9		10
CLASS.	5 MONTHS AND UNDER.		ONE YEAR AND UNDER.		14 YEARS AND UNDER.		35 YEARS AND UNDER.		50 YEARS AND UNDER.		70 YEARS AND UNDER.		ABOVE 70 YEARS.		GRAND TOTAL.		REMARKS.
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	
Born dead ...																	
Died in child-birth																	
Suicide ...																	
Other deaths by violence ...																	
Deaths from disease																	
Total ...																	

*Dated*_____

_____186 .

District Superintendent of Police.

From these one general return will be prepared, and the Inspector General of Prisons will furnish to the Government along with it a monthly memorandum on the state of the public health in the province.

Police officers are enjoined in their monthly tours to test the correctness of the mortuary returns, and to report to the authorities those villages in which they may prove to be inaccurate. No difficulty or opposition has been experienced in the introduction of registration, and it is believed that with care and attention on the part of district officers, a fair degree of accuracy may soon be obtained.

No attempt has yet been made to register births. The Committee which was assembled by His Honor the Lieutenant Governor to consider the advisability of introducing registration were of opinion that, while fully admitting the importance of such a registry, too much should not be attempted at one time, and that the consideration of this additional proposal should be deferred for the present.

Registration of Deaths in the North-Western Provinces.

135. In the North-Western Provinces the Board of Revenue was directed to carry out the measure, and a circular order on the subject was accordingly issued at the end of 1864. As far as the actual number of deaths was concerned, no difficulty was anticipated, but in the first instance, and until the people became familiar with the system, accuracy of return with regard to the

cause could not be expected. It was trusted that the system would improve by degrees, and it was directed that all vexatious and needless interference should be carefully avoided. The employment of Police agency was forbidden. In agricultural villages and small townships, the Register of deaths was to be kept by the Putwarrees, the Chowkedars or village Watchmen, reporting to them within 24 hours the deaths which occur in their beats. The Putwarrees' Returns prepared in annexed Form A were to be transferred at the close of each month to the Tehseeldar, who would in his turn furnish an Abstract of the whole in Form B to the Collector of the District, the same form being employed by him in reporting the annual results.

FORM A.

Village.	Name.	Parentage and Caste.	Sex.	Age.	Date of Death.	Cause of Death.

FORM B.

Village or Township or Bazaar.	Number of Deaths.	Caste.	Sex.	Ages.					Cause of Death.
				Under 10.	10 to 20.	20 to 40.	40 to 60.	Above 60.	

In towns and bazaars the same forms were to be employed, although the agency by which they were to be prepared somewhat differed.

How this system has worked and what have been the results for 1865 are not known, as, when information was requested, no Report on the subject had yet reached the Local Government.

Registration of deaths in Bengal.

136. In Bengal, Quarterly Returns of Births, Marriages, and Deaths of all European British subjects only are prepared. The question of introducing a system of registering deaths and the causes of death has long occupied the attention of the Government, but it has only been found practicable to attempt registration in Calcutta, and no steps have yet been taken to extend it to other large towns or to the districts generally. The small amount of success which has as yet attended registration of deaths in Calcutta is not encouraging. This subject will be again referred to. The question is doubtless beset with many practical difficulties, but it would appear that these can best be overcome by a more general introduction of the system and by initiating the people gradually into the very simple measures required.

Registration of deaths in the Central Provinces.

137. In the Central Provinces some Officers were of opinion that the Putwarrees would be the best registering agency for villages; others that the Police acting through the Landholders would succeed in obtaining fairly reliable Mortuary Statistics. All, however, agreed that the most suitable agency for towns and cities would be the Town Police, and that the desired Returns could be obtained both from towns and villages without vexation to the people. In his order of the 19th August 1864, the Chief Commissioner expressed his opinion that in some of the districts the Putwarrees had neither sufficient influence nor zeal to understand the duties proposed. In those, therefore, and in the towns and cities the registration would be conducted by the Police, leaving it in the hands of the Putwarrees in those districts only in which they appeared to be fairly efficient. District Officers were directed, as a commencement, to select certain towns or sub-divisions of the country in which the experiment might be undertaken and from which it could be gradually extended.

"The results of these instructions," it appears, "have been as yet not quite satisfactory; some of the Returns received have been very imperfect, owing principally to the inefficiency of the agency employed. In some districts, however, where towns and villages were specially selected for the carrying out therein of a system of registration, the results have been good, and the Returns obtained fairly reliable." Further detailed Reports have been called for, and the results will shortly be communicated.

Registration of deaths in Oude.

138. The agency employed in Oude has been the Village Police in rural districts and the Town Police in towns. Every Police Station has been required to keep up a Register in the accompanying form—

A

Register of Deaths among the inhabitants of the_____Police Station.

1	2	3	4	5	6	7	8	9					10
Date.		Village, Town, City or Mohullah.		Sex.		Age.	Caste.	Causes of Death; Nature of Illness.					Remarks.
Year.	Month and Date.			Male.	Female.			Small-pox.	Cholera.	Fever.	Other Diseases.	Total Deaths from Diseases.	

These Registers were to be forwarded in original immediately after the end of the month through the District Superintendent to the Deputy Commis-

sioner, and from them an Annual Return in the annexed Form B was to be framed—

B.

Deaths distributed among the Months of the year. Supposed population of District—

Months.	Deaths from Small-pox.	Deaths from Cholera.	Deaths from Fevers.	Deaths from other Diseases.	Total in each month.	Remarks.
January						
February						
March						
April						
May						
June						
July						
August						
September						
October						
November						
December						
Total ...						

A Return has been forwarded showing the results throughout the whole province during 1865, but it is so manifestly incorrect that the introduction of an efficient system for the registration of deaths is now under the Chief Commissioner's consideration.

Registration of Births and Deaths in British Burmah.

139. A system of registering both births and deaths was inaugurated in British Burmah on the 1st October 1864, and the results which have been obtained from that date up to the close of the Official Year on the 30th April 1865 have been communicated. The Registers as yet are stated to be far from correct, but it is believed that the experience which has been gained during the period in question, and the increased supervision exercised over the keepers of the Registers, will lead to more trustworthy records being maintained in future. At present registration is carried out only in the chief towns, but it is intended gradually to extend the system to all towns and villages. The births and deaths in each quarter of the towns are recorded by the "Goung." A registering clerk goes round each quarter daily and collects these records from the "Goungs" and fills up from them his Register of births and deaths daily; at the end of the month the figures are added up, inspected, and countersigned by the Magistrate and the Civil Surgeon, the latter of whom at the close of the Official Year pre-

pares a full Report on the statistics. The form of Registers kept up are as follows :—

FORM No. 1.

Register of Births within the Town of _____ *District of* _____
for the Month of _____ 186 .

Name of Quarter of Town or Street where Birth occurs.	Name of Father and Mother of Child born.	Sex of Child.		Date of Birth.	Race of Parents.
		Male.	Female.		

FORM No. 2.

Register of Deaths within the Town of _____ *District of* _____
for the Month of _____ 186 .

Name of the Quarter of the Town or Street where Death occurred.	Name of Person's Father and Mother.	Date of Deaths.	Age of Person.	Sex of Person.		Race of Person.	Name of Person.	Supposed or ascertained cause of Death.
				Male.	Female.			

From these the following Returns A, B, C, D are prepared :—

FORM A.

Registration Return of Births in the Town of _____ *for the year ending 30th April* 186 _____ *Population* _____

Months.	Sex.	Races.							Total Males and Females.
		Burmese.	Arrakanese.	Karens.	Shans.	Chinese.	Natives of India.	Other Races.	
May ...									
June ...									
July ...									
&c., &c. ...									

FORM B.

Registration Return of Deaths in the Town of _____ *for the year ending 30th April* 186_____ *Population* _____ *Souls.*

(The form of this Return is exactly the same as that of A.)

FORM C.

Return showing the supposed and ascertained causes of Death among the several races in British Burmah during the year ending 30*th April* 186 .

NATURE OF DISEASE.	BURMESE.			ARRAKANESE.			KARENS.			SHANS.			CHINESE.			NATIVES OF INDIA.			OTHER RACES.			TOTAL.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
Fever, &c. ...																								

FORM D.

Return showing the deaths at various ages among the several races in British Burmah during the year ending the 30*th April* 186 .

AGE.	BURMESE.			ARRAKANESE.			KARENS.			SHANS.			CHINESE.			NATIVES OF INDIA.			OTHER RACES.			TOTAL.		
	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.	Males.	Females.	Total.
Still-born																								
Under 1 month ...																								
,, 6 months ...																								
,, 1 year ...																								
From 5 to 10 years																								
,, 10 ,, 15 ,, ...																								
,, 15 ,, 20 ,, ...																								
,, 20 ,, 25 ,, ...																								
,, 25 ,, 30 ,, ...																								
and so on by five years periods to 70 and upwards																								

Founded on these Returns, Health Reports have been drawn up by the Civil Surgeons for ten of the largest towns in British Burmah. Although the statistics are confessedly imperfect, and any conclusions founded on them on this account open to objection, the introduction of such a system is a very important step in sanitary reform, and one which, it is hoped, will soon be shortly followed as far as possible in every large town and district throughout India.

Sparseness of the population of British Burmah.

140. In connection with measures for registering births and deaths in British Burmah, an interesting memorandum on the sparseness of the population of that country, written by the Chief Commissioner, Colonel Phayre, may here be noticed. Although the Province is one of the richest in the Empire, although it has seldom been invaded or at least overrun by a foreign foe, although the Government has not been more oppressive in past times than the Native Governments of India, China, or Japan, the fact remains that the population of British Burmah is not more than twenty to the square mile. Moreover, there is no good reason for concluding that the population of the countries now forming British Burmah was ever more numerous than it is at present. "We come to the fact," observes Colonel Phayre, "that a healthy robust people dwelling in a fine country, with abundance of food and clothing, with comfortable houses suited to the climate, having, as the observation of Europeans confirms, numerous children born to them with no suspicion of the prevalence of infanticide or of exposure of children; we come, I say, to the conclusion that this people, with every thing apparently in its favor, has never increased beyond the scanty number we now find. Why is this? Such is the question which has to be solved." All the Medical Officers were invited to aid in elucidating it. Dr. Lees, Civil Surgeon of Akyab, after a careful analysis of the vital statistics of that town, and a perusal of the reports which had been furnished by other Officers, has expressed his opinion that the sole cause of the sparseness of population is the excessive mortality in early life. This he attributes, first, to the early period of life at which child-bearing commences, and which proves so detrimental to the health and vigor of the offspring; secondly, to the common practice of prolonged lactation, the evil effects of which are felt, not only by the mother and suckling, but often also by the offspring as yet unborn; and thirdly, to the severe after-labor treatment to which the mother is exposed. These all concur in diminishing the amount of natural nourishment for the child, to supplement which recourse is often had to indigestible articles of food. "I have myself," says Dr. Lees, "seen with dismay newly-born children stuffed with rice previously well masticated by the mother or attendant." To these causes of infant mortality are to be added want of proper care and defective sanitary arrangements. The statistics from which these general deductions have been framed are too scanty to admit of altogether reliable generalizations, but there is every reason to conclude that they represent facts which the Returns of future years may more fully bear out.

Registration of deaths in Calcutta.

141. It will thus be seen that in the Provinces generally not much has yet been accomplished in registration, and even in Calcutta, where peculiar facilities exist for carrying out such a system, the results are most unsatisfactory. From the record of the bodies brought to the various burial-grounds

and burning-ghauts, the mortality returns can be checked, and the actual number of deaths among the residents of the town can be thereby ascertained within a very small percentage. But out of a total number of 23,233 ascertained deaths which took place during 1865, it was found that only 12,298, or a little over 50 per cent., had been registered. The more strict supervision of the Registration Department which has been enjoined will, it is hoped, lead in future to more accurate Returns.

Mortality in Calcutta.

142. The results of the Census taken early in the current year had not been fully ascertained when the Report of the Municipality for 1865 was drawn up, but enough was known to warrant the conclusion that the day population of the town, including the Fort, Coolie Bazaar, and the Shipping, might be fairly estimated at 400,000. If this be correct, then the mortality had reached, during 1865, the high figure of 58·08 per 1,000. "Deaths from Zymotic diseases alone aggregate 81·4 per cent. of the entire mortality of the town, and of these, again, the first named three diseases aggregate 36·4, or nearly one-half of the entire mortality.

Diarrhœa...	4·2	36·4
Dysentery	10·4	
Cholera	21·8	
Fever	17·7	
„ Remittent	5·3	
Small-pox	22·	
	81·4	

Necessity of general Sanitary Administration.

143. If, even in Calcutta, where much attention has been devoted to the subject, the results of registration of even the actual number of deaths are so unsatisfactory, and so little to be relied upon, some idea may be formed of the difficulty, and indeed the impossibility, of furnishing any accurate information as regards the diseases which have chiefly prevailed during the past year in the various districts of the Bengal Presidency, and of the proportions in which they have contributed to sickness and mortality among the people. It is only when disease has assumed unusual virulence, or when the fatality attendant on it is more than ordinarily excessive, that the facts become at all known. As a rule, the sanitary condition of the people who dwell even on the outskirts of our Civil Stations and of our Military Cantonments is unknown to the European Community. The question of general sanitary administration which was alluded to in the last Annual Report is still under consideration, but it is hoped that orders will soon be issued on this important subject. Although the time of Civil Medical Officers is much occupied with multifarious and important duties, there are few, if any, who would not gladly interest themselves in the health of the people of their respective districts, and who would not willingly aid in collecting trustworthy information regarding the origin and spread of many diseases in respect to which accurate data are so much desired.

Prevalence of Cholera.

144. With the scanty information as yet available, it is impossible to give a connected account of the unusual prevalence of any disease. The occurrence of even severe epi-

demics among the people often passes unnoted, and in other cases receives only incidental mention either in Jail or Dispensary Reports. Cholera, which caused considerable mortality among the Troops and Prisoners in Central India in 1865, prevailed also among the free population. In the Report on the Dispensaries of the Central Provinces for 1865, it is noted that "Cholera raged with more or less virulence from the end of February to September, in one or other of the districts, committing fearful destruction to human life in most of the villages which it visited, and in many places rendering it dangerous to travellers to pass along the thoroughfares of communication." Although the *origin* of the disease has been attributed to the concourse of pilgrims at the Mahadeo Fair in the Puchmurree Hills, and its diffusion among the inhabitants has been believed to be due to the dispersion of the infected pilgrims to their homes, there is a want of precise data fully to establish this opinion, and it appears highly probable that, while these causes no doubt facilitated the spread of Cholera, the epidemic formed part of the same distribution of the disease which proved so fatal in Bombay. The measures, however, which have been adopted with the view of regulating such pilgrimages, and of ensuring an improved sanitary condition among the crowds of human beings which frequent them, cannot fail to be beneficial.

Necessity of Studying Cholera in India as a whole.

145. There can be little doubt that Epidemic Cholera must bear a certain relation to those portions of the country in which it always has more or less its home. What these relations are, it is of the greatest importance, in a sanitary point of view, to determine, but, in order to arrive at any just conclusions, it appears indispensable that all the statistics on the subject should be considered as a whole. It is only by concentrating the facts regarding this mysterious disease, which are available throughout the entire Peninsula, that we can hope to arrive at any satisfactory conclusions.

Prevalence of Contagious Fever.

146. The contagious fever which proved so fatal in many of the Jails during the past year has not spared the people at large. It has been mentioned as prevailing in the Hurdui district in Oude, and in the Agra, Futtehghur and Bareilly districts in the North-Western Provinces. Of the epidemics no particulars have been communicated. Regarding its appearance in certain of the districts of the Lahore, Umritsur, Jullundur, and Umballah divisions, as well as in the Kurnaul, Sirsee, Dera-Ghajee-Khan, Peshawur, and Huzara Districts of the Punjab, some interesting particulars have been learnt. The Civil Surgeon of Umritsur reports that "the people considered it to be contagious. If one person in a house took the disease, all the others living in the house were certain to do so. If a person had fever, and came to live in a village where there was none, the persons living in the house were sure to be attacked first, and nextly those persons coming more or less frequently to the house. The persons occupying the adjacent houses were more likely to take it than those living in the houses at a little distance. The villagers themselves prevented the removal of the sick from one house to another, or from one village to another. The Hakeems knew of no remedy to prevent the disease running its course. It generally lasted 8 or 9 days, and then left the patient very weak. This not unfrequently was followed in one or two days by a return of the fever

as a relapse. With a relapse few recovered. Most deaths occurred at the height of the fever on the 6th or 7th day, or after the first relapse; a second relapse was certain death. The fever was precisely similar, from all the Native Doctor who was sent into the district to report on it could discern, to that occuring in the Jail." Such facts are of great value in supporting the opinion which has been expressed regarding the manner in which epidemics of this fatal disease originate in Jails, and in showing the value of the practical sanitary measures which have been recommended to prevent their occurrence.

Contagious Fever in Western Malwa.

147. Of the prevalence of this fever in certain districts of Western Malwa, Dr. Brodrick, of the 1st Central India Cavalry, gives a very instructive narrative. "At most of the places," he writes, "the disease was known as 'Gujeratee Bemaree; by the educated Mussulmans of Jowrah, it was described as 'Yerkan' or 'Peelia,' both terms indicating Jaundice, whilst at Oojein it was called 'Belia.' It is called Gujeratee Bemaree because it is believed to have arisen in the Gujerat Country, and to have passed thence into Malwa. Yerkan and Belia are significant of a marked feature of the disease, namely, the yellowness of the skin, and of the whites of the eyes.

"The etymology of the word Belia is curious. It was thus explained to me by a Pundit. 'An ordinary tree,' he said, 'is interrupted in its growth by the branches it gives off; these branches are analogous to the breaks or intermissions in the course of an ordinary fever. But a twining plant or creeper gives off no branches. It grows on and on without ramifications. So this new kind of fever goes on in its career without any intermission; so it is called Belia.'"

The Natives themselves thus described the disease:—"It was a fever that appeared soon after the cessation of the rains; it lasted ordinarily three days, without a pause in its career. After three days the patient's breath became arrested, and so he died. The whites of his eyes became yellow, his skin became yellow, his sweat was yellow, and it stained his clothes yellow. The urine was high colored, the bowels constipated, the skin was very hot; or the patient vomited blood, or had purging of bloody matters, or he passed worms by stool and vomit. He had pain under the rib, sometimes on one side or on the other; this pain made him catch his breath. There was no cure from this disease. Some men by God's goodness got well; most died: it was more fatal than 'wobah' (Cholera). It attacked great and small, rich and poor, opium-eaters, and non-opium-eaters, indifferently." Such was the graphic description of the fever given by the people themselves. To estimate the mortality it occasioned even with approximate accuracy was difficult. In one town, numbering 2,500 houses, about 300 persons had died of it. "The village of Akia had formerly contained 50 houses; the 50 had now dwindled to 25. Twenty-five houses had been desolated by this dreadful scourge, and the crumbling walls of the crazy roofless and tenantless huts, where the Dhatoora and other wild plants were already springing up, formed one of the most miserable pictures I had ever gazed on. The Thakoor of the village, a kinsman of the Rajah of Seeta Mhow, told me how 22 persons, members of his family and household, had been swept away since the month Bhadon (September). Of these 22 souls, three were his own brothers, one a nephew, and one a grand-

nephew. I saw he had himself suffered from the malady too. He said that over 90 persons altogether, inhabitants of Akia, had died from the new fever, besides 20 dying from Cholera; and in depicting the ruin that had overtaken his village, he used the eloquent expression that Sir John Malcolm remarks upon, as used in certain parts of Malwa to express the ruin that marked the track of the Pindarree free-booters; he said his village was 'Bechiragh' (without a light). The same story," he proceeds, "met me wherever I made enquiries; the same kind of disease similarly fatal."

Contagious Fever in Emigrant Ships.

148. One of the most interesting questions on which the Commission was called during the past year to give an opinion related to the appearance of this same fever in Emigrant Ships sailing from Calcutta. Seven of the vessels which left Calcutta with coolies in the season 1864-65 were the scene of very lamentable sickness and mortality, the percentage of deaths to strength during the voyage ranging from 9·9 to as high as 50·3. The questions which had to be determined were—to what disease was this great loss of life due; how had the disease originated; and what measures appeared advisable to prevent the recurrence of such a calamity? At first sight there appeared much ground for the opinion which had been expressed by the Government Medical Inspector of Emigrants, and by the other Calcutta Emigration Authorities, to the effect that the fever had been originated on board the vessels by excessive over-crowding. The regulated space per cooly had lately been curtailed; the ships which suffered, with one exception, conveyed emigrants to Demerara, and the Demerara Emigration Agent was the only one which acted up to the new regulations, the others being fully impressed with the danger of so doing. The disease, it was said, could not have been imported from the Depôt, for there was no unusual sickness there; the Emigrants had been selected with the greatest care, and there was no other explanation which could account for the facts except that the disease had originated on board the ships. But a careful examination of all the evidence led the Commission to form a different conclusion. It was shown that the amount of over-crowding which existed was altogether insufficient to produce the results attributed to it; that it was not aggravated by any defective sanitary arrangements; that ships as much and even more crowded than those in which the fever broke out made prosperous voyages, while cases could be cited in which a ship, in no respect crowded, was yet smitten by the disease; and lastly, it was proved that in each one of the vessels concerned, the fever appeared so very shortly after leaving Calcutta as to render it apparently impossible that over-crowding could have been the cause. In one of them the epidemic broke out the very day the vessel sailed. It was shown that the fever was in all respects the same as that which proved so fatal in jails; that there had been 12 fatal cases apparently of the same disease at the Depôt; and what, perhaps, was the strongest fact of all, it was pointed out that some of the first cases which occurred in the ships, and some which occurred in the Depôt, were among men who had been received from Up-country on one and the same day. The evidence, therefore, appeared to the Commission complete, and to prove beyond all doubt that the *origin* of the fever had no connection with circumstances on board the vessels, although those circumstances were most favorable for the spread of the disease when once it had appeared. The question is one full of interest and importance, not only as regards Emigrants and

the sanitary precautions which ought to be adopted as far as possible to secure their safety,—precautions which were fully considered by the Commission, but also as regards the manner in which this disease finds its way into jails, and the measures which are urgently required to prevent its access.

Fever in Bengal.

149. In the last Annual Report reference was made to the fever which has of late years proved so fatal in Bengal. During 1865 it has prevailed in the Jessore District. As regards this epidemic no satisfactory information has been obtained. In describing this part of the country, in which drainage is much required, the Civil Surgeon remarks:—"In travelling to a sub-division I was able to take a short cut across country by boat for 3 miles, the water over the face of the land being nowhere less than 4 feet in depth; and a similar route could be taken for eleven miles in another place." The fever is described as having set in with the rains, becoming more extended as the season advanced, and not declining as usual during the cold weather. The sluggish stream on which the station of Jessore stands is said to have been a few years ago a rapid tidal river, but the bed has silted up and formed a large malarious lake. An immense number of people are reported to have suffered from the fever, indeed a healthy person was the exception; but the proportion of deaths appears to have been small compared with the number of those attacked. Some difference of opinion exists as to what the exact type of fever was. In one Report it is regarded as the usual fever, unusually severe; while in another Report it is spoken of as "more virulent, prostrating, and fatal than the usual fever which succeeds the rains." While attributing the epidemic to jungle, marshes, and tanks, one of the Deputy Magistrates expresses his opinion that some additional influence must also have been at work. The reasons he assigns for this opinion are—first, because such causes have existed formerly in equal force, and yet no epidemic prevailed; secondly, adjacent villages, similarly conditioned as to their sanitary state, have suffered in very different degrees; in one there being 45 per cent. of deaths, while in another there was little or no disease; thirdly, it appeared that the fever spread, and did not attack different places simultaneously.

To what this fever ought really to be attributed is still a matter demanding inquiry. The Commission expressed its opinion that it is far more probable that this disease has its origin in a certain specific poison propagated from man to man, than that it is produced by any sanitary condition however unfavorable. The symptoms described in Dr. Elliott's Report are all consistent with the idea that it belongs to the same type as the contagious fever so often alluded to. There are other facts also which strongly support this opinion. Quinine, which is of so much value in all malarious fevers, was reported to be of no avail. The influences to which the disease was attributed, and under which the people lived, were little altered from those under which they and their forefathers had lived for years, and could hardly account for a disease which swept over their villages and left some of them at least without an inhabitant; and to this there is another very strong fact to be added, and that is, that the epidemic prevailed at a season of the year when malarious influences generally abate. The subject is one fraught with much interest, not only in a scientific point of view, but as affecting the welfare and the lives of so many of the people.

The "Plague" at Pahlunpore.

150. Papers connected with an outbreak of severe sickness in the Pahlunpore Districts during the past year were received by the Commission, and are full of interest. The disease was spoken of generally as the *Plague*, but by the Medical Officer who was sent to report on it, it was considered of malarious origin, and was called "Bilious Remittent Fever." The earliest record of any visitation of Plague in the Bombay Presidency which can be found is dated November 1816. In the year previous it had prevailed in the Wajur Districts, and it is then spoken of as having extended to Sind. It was next reported as having made its appearance in Gujrat in 1817. In 1836 it appeared at Palee, where it caused very great mortality. In 1856 it again attracted attention, and was reported as having made its appearance near Bhaiwarrah. By some Medical Officers it was described as undoubtedly "plague," but as early as 1820, one Medical Officer expressed his opinion that the disease was but an aggravated description of Typhus Fever. The discussion of this question would be out of place, but it is worthy of investigation in any fresh outbreak which may unhappily occur, whether the so-called plague may not be an aggravated form of the contagious fever which has been so frequently alluded to, and which by many has been regarded as typhus.

Prevalence of Small-pox.

151. Small-pox which was epidemic in Calcutta and Lower Bengal during 1864, continued to be very prevalent in the early part of the current year. At Deogurh it raged to such an extent that it was found necessary for the public health to interfere with the usual assemblage of pilgrims at that place. In many districts the unusual prevalence of the disease during the year has been incidentally mentioned. It is impossible, however, to form any adequate idea of the amount of sickness and mortality which it occasions. In many villages in the Punjab, which were visited during the past year by the Superintendent of Vaccination, it had been raging. In not a few he reports that he found but two or three children who had not had the disease; and in some every inhabitant had had it.

The extent to which vaccination has been practised forms a subject of so much importance in a sanitary point of view that a short account will be given of what has been accomplished in this respect in each of the Local Governments and Administrations during the past year, and of the amount of success which has attended these operations.

Vaccination in Bengal.

152. From the following Table, it will be observed that in Bengal a grand total of 1,52,099 persons were vaccinated, and of these 1,21,618 cases are recorded as successful. The Return is given in *extenso*, in order to show how varied are the results in the different districts. In some parts of the country the prejudices of the people are stronger than in others, and the extent of them in no small degree determines the extent of vaccination. But there is no sanitary measure in carrying out which the tact and judgment of the Medical Officer contribute so largely to success.

General Annual Return of Vaccination in Bengal for the year 1865.

Medical Circles.	Stations.	Number of Vaccinators attached.	Number Vaccinated.	Successful Cases.
Presidency Circle.	Chowringhee Depôt	2	2,301	1,225
	Park Street Dispensary	1	4,191	1,883
	Medical College	1	1,751	519
	North Division	5	21,261	15,156
	Middle „	6	25,249	20,215
	South „	6	39,655	33,282
	Total ...	21	94,408	72,280
Barrackpore Circle.	Akyab	1	629	242
	Balasore	2	313	222
	Bancoorah	...	337	141
	Baraset	1	1,091	1,051
	Beerbhoom	1	2,209	1,521
	Burdwan	1	575	505
	Bhuddruck	...	20	16
	Cuttack	1	1,342	956
	Darjeeling	6	3,566	2,026
	Dinagepore	...	5	3
	Hooghly	2	3,825	3,670
	Howrah	1	8,370	8,226
	Jessore	1	530	217
	Kishnagore	1	1,033	908
	Malda	...	195	94
	Maunbhoom...	1	153	130
	Midnapore	2	12,147	11,703
	Moorshedabad	2	1,278	1,063
	Mulnath	...	.....	.....
	Natore	1	2,928	2,852
	Ooterparrah...	1	1,836	1,806
	Pooree	1	606	202
	Rampore Bauleah	1	1,915	1,798
	Rungpore	2	2,130	1,915
	Rajmehal	...	.....	.....
	Total ...	29	47,024	41,267
Dacca Circle.	Burrisaul	1	214	96
	Bogra	1	558	530
	Bullooah	1	10	8
	Chittagong	1	250	113
	Cherrapoonjee	1	121	92
	Cachar	1	496	412
	Dacca	3	1,252	759
	Debrooghur	1	53	34
	Furreedpore	...	241	213
	Gowhatty	1	355	257
	Mymensingh	1	830	736
	Noacolly	1	12	7
	Pubna	1	206	154
	Seebsaugor	1	947	585
	Sylhet	1	293	250
	Tezpore	1	24	6
	Tipperah	1	143	109
	Total ...	18	6,005	4,361

General Annual Return of Vaccination, &c.,—continued.

Medical Circles.	Stations.	Number of Vaccinators attached.	Number Vaccinated.	Successful Cases.
Dinapore Circle.	Arrah	1	291	205
	Bhaugulpore	1	42	16
	Chumparun	1	414	276
	Gyah	1	154	83
	Monghyr	2	314	195
	Patna	3	1,678	1,455
	Purneah	1	171	102
	Ranchee	1	82	37
	Sarun	1	25	7
	Tirhoot	1	1,491	1,334
	Total ...	13	4,662	3,710
	Grand Total ...	81	1,52,099	1,21,618

Vaccination in the North-West Provinces.

153. The following Abstract of the Returns of the North-West Provinces shows that during the season 1865-66, 1,66,585 persons were vaccinated; and that of these 1,25,072 were known to be successful cases, or an average of 80·74 per cent. of those operated on.

Abstract of the Vaccination Returns of the North West Provinces for the Season 1865-66.

Locality.	Successful.	Unsuccessful.	Doubtful.	Result Unknown.	Total.	No. of Vaccinators.	Average per-centage successful.	Average number of operations per mensem by each Vaccinator.
Kumaon and Gurhwal Circle ...	22,603	1,292	1,152	1,350	27,397	13	90·60	350
Rohilcund ,, ...	3,378	4,071	3,354	2,523	53,326	36	85·38	296
Agra and Meerut ,, ...	32,569	7,664	1,177	3,121	44,531	71	78·65	125
Allahabad and Jhansie ,, ...	18,246	7,464	1,348	2,425	29,483	47	67·43	125
Benares and Goruckpore ,, ...	7,276	2,357	960	1,253	11,846	31	68·68	76
Grand Total ...	1,25,072	22,848	7,991	10,672	1,66,583	198	80·74	194

A more detailed statement of the operations of the season is given in another Table, in which also the results in each particular locality are compared with those which were obtained in the year previous.

VACCINATION RETURN for the North-West Provinces for the Season 1865-66.

Locality.	Season.	Period.	No. of Vaccinators.	Paid by	Successful.	Unsuccessful.	Doubtful.	Result unknown.	Total.	Percentage Successful.	Average No. of operations by each man per mensem.
Rohilcund Division	1864-65.	Nov. to March ...	30	Government.	29,343	3,969	2,771	2,121	38,204	81·32	254·
Ditto ditto	1865-66.	Ditto ...	29	Ditto ...	35,613	3,493	2,746	1,949	43,801	85·09	302·
Moradabad City	1864-65.	March ...	1	Municipal ...	82	20	16	1	119	69·49	119·
Ditto	1865-66.	Nov. to March ...	1	Ditto ...	1,794	96	112	121	2,123	89·66	424·
Bareilly City...	1864-65.	March ...	2	Ditto ...	309	41	23	29	402	82·84	201·
Ditto	1865-66.	Nov. to March ...	2	Ditto ...	1,819	199	173	132	2,323	83·20	232·
Shahjehanpore City	1864-65.	Jan. to March ...	1	Ditto ...	271	52	17	25	365	79·41	121·
Ditto	1865-66.	Nov. to March ...	1	Ditto ...	797	160	149	64	1,170	72·60	234·
Budaon City	1865-66.	Ditto ...	1	Ditto ...	1,192	44	89	116	1,441	89·95	288·
Terai Pergunnahs	1864-65.	Ditto ...	2	Local ...	1,338	176	116	108	1,738	82·08	173·
Ditto	1865-66.	Ditto ...	2	Ditto ...	1,163	79	85	141	1,468	87·64	146·
Kumaon and Gurhwal	1864-65.	Oct. to March ...	10	Government.	15,372	821	571	438	17,202	91·69	286·
Ditto	1865-66.	Ditto ...	10	Ditto ...	19,432	1,016	963	930	22,341	90·75	372·
Kumaon Bhaber	1864-65.	Nov. to March ...	3	Local ...	2,431	140	134	208	2,913	89·87	194·
Ditto	1865-66.	Oct. to March ...	3	Ditto ...	4,171	276	189	420	5,056	89·96	280·
Agra and Meerut Division ...	1864-65.	Nov. to March ...	60	Government.	20,562	4,895	765	3,783	30,005	78·40	100·
Ditto ...	1865-66.	Ditto ...	60	Ditto ...	26,748	6,469	1,086	2,755	37,058	77·97	123·
Agra City	,,	Ditto ...	3	Municipal ...	892	503	4	75	1,474	63·74	98·
Furruckabad City	,,	Ditto ...	1	Ditto ...	469	53	10	28	560	88·15	112·
Allyghur ditto	,,	Jan. to March ...	1	Ditto ...	316	57	.....	...	373	84.71	186·
Hattras ditto	,,	Ditto ...	1	Ditto ...	161	92	34	20	307	56·09	153·
Ajmere ditto	,,	Nov. to March ...	1	Ditto ...	339	79	7	18	443	79·76	88·
Myaunuggur ditto	,,	Ditto ...	1	Ditto ...	1,325	142	6	19	1,492	89·95	298·
Goonah ditto	,,	Ditto ...	1	Local ...	1,548	31	1	3	1,583	97·98	316·
Muzufferuuggur ditto	,,	Ditto ...	1	Ditto ...	397	108	12	120	637	76·78	127·
Sahaliruupore ditto	,,	Ditto ...	1	Ditto ...	374	130	17	83	604	71·78	124·
Allahabad and Jhansie Division ...	1864-65.	Jan. to March ...	40	Government.	4,162	2,330	384	1,442	8,318	60·52	104·
Ditto ...	1865-66.	Nov. to March ...	45	Ditto ...	18,246	7,464	1,348	2,425	29,483	67·43	125·
Allahabad City	,,	Ditto ...	1	Municipal ...	} Incorporated in the above.						
Cawnpore City	,,	Ditto ...	1	Ditto ...							
Benares Division	1864-65.	Jan. to March ...	30	Government.	3,265	1,107	372	824	5,568	68·82	92·
Ditto	1865-66.	Nov. to March ...	25	Ditto ...	6,189	2,049	825	1,140	10,203	68·	82·
Mirzapore	,,	Ditto ...	3	Municipal ...	205	79	29	25	338	} 71·	55·
Chunar	,,	Ditto ...	1	Ditto ...	60	30	12	13	115		
Ghazeepore	,,	Ditto ...	1	Ditto ...	460	123	26	30	639		
Azimgurh	,,	Ditto ...	1	Ditto ...	362	76	68	45	551		

The results are very satisfactory. The number of the successfully vaccinated, which in 1864-65 was 77,135, has been nearly doubled in 1865-66. In his report on the operations of the past year, Dr. Pearson, Superintendent General of Vaccination in the North-West Provinces, calls attention to the much larger percentage of success attained in those districts where vaccination has been carried on for years—such as Kumaon, Gurhwal, and Rohilcund, as compared with those divisions, Agra, Meerut, &c., where the vaccine establishments are as yet new to their work—and draws the encouraging inference that—"time only is needed to render Vaccination a fact to be accepted by the Native mind." In some of the districts in which operations have lately been carried on, especially in Goruckpore and Benares, he remarks that the prejudices of the people are very strong. "The population is chiefly Hindoo, is wedded to inoculation, and regards small-pox as a kind of religious institution not to be interfered with. Moreover the inoculators are interested opponents; but Dr. Sutherland is gradually removing this source of obstruction by entertaining them as vaccinators." The system adopted in the North-West Provinces is thus described:—

"To every Tuhseel in the North-West Provinces, one Vaccinator is attached; and in every city where there are Municipalities, and the Commmissioners are enlightened, one, two or three Municipal Vaccinators are employed. To about every 12 Vaccinators, there is a Native Superintendent, and to every 50 or 60 Vaccinators a European Superintendent—a medical officer. To give a clear idea of the practical method of the working of the system, I will detail a day's duties of the European Superintendent. Having arrived at the Tuhseel, he proceeds to the village or place where the Vaccinator had vaccinated the previous seventh or eighth day, and which is ascertained by referring to the Vaccinator's daily diary book. He then calls for the village record from the *Putwarree Zemindar* or *Chowkedar*, or with whomsoever it may have been left, and summons all the children whose names had been entered therein as vaccinated seven or eight days previously. The results are inspected and verified, faults pointed out, instruments examined, Vaccinator's capacities and character ascertained, and the people addressed. This round of duties goes on from day to day throughout the whole vaccine season. The Native Superintendent is also perpetually on the move, employed in the same duties, and in this manner each Vaccinator gets visited several times during the season. The check against falsity of returns by repeated inspection of the Vaccinator's daily diary and the return left in the village (which must correspond) is as complete as any check can be, and I have no hesitation in declaring that the system works well and honestly, and I make the declaration after an experience of 12 years. The fault of the present system is the paucity of the establishments; but Government cannot be expected to vaccinate gratuitously the millions of India. The time will come when vaccination will be believed in by the Natives, and sought at the hands of their own medical practitioners, as happens in other civilized countries. As regards the collecting of crusts, this is not now a compulsory matter, as in some districts the people themselves are very averse to it, and much time is undoubtedly wasted in collecting more than are absolutely required for use. Prizes are, however, given for the best collection of crusts; and I know of no better way of really testing the energy and capabilities of a Vaccinator than by the above method."

154. The Returns of vaccination in Oude also refer to the season 1865-66. The following Table which embraces the operations in that province, shows a total number of 6,495 vaccinations, of which 4,087 are returned as successful.

Vaccination in Oude.

General Return of Vaccine Operations in the Province of Oude during the year 1865-66.

Months.	Total number Vaccinated.	Successful.	Unsuccessful.	Doubtful.	Total.	Remarks.
November 1865 ...	754	325	321	108	754	
December 1865 ...	1,396	890	333	173	1,396	
January 1866 ...	1,690	1,121	361	208	1,690	The vaccine operations extend over a period commencing from 15th November 1865 to 31st March 1866.
February 1866 ...	1,697	1,091	369	237	1,697	
March 1866 ...	958	660	230	68	958	
Total ...	6,495	4,087	1,614	794	6,495	

155. The following Return shows the number and results of the vaccinations performed in the Punjab during 1865, from which it appears that 2,30,607 persons were vaccinated, of whom 1,96,400 were operated on with success. These vaccinations have been performed partly by the operators belonging to the Punjab Special Vaccine Establishment, and partly by Vaccinators attached to dispensaries. Among the former, the successful cases are reported as 92·8 per cent., and among the latter 75·7 per cent of the whole.

Vaccination in the Punjab.

Numerical Return of Vaccinations performed in the Punjab for the year 1865.

	Successful.	Unsuccessful.	Doubtful.	Re-vaccinated.	Unknown.	Total.	Remarks.
Vaccinations performed by the Punjab Vaccine Establishment	1,23,536	5,542	2,805	1,162	....	1,33,045	Successful cases 92·8 per cent.
Vaccinations performed by Vaccinators attached to dispensaries	72,864	15,241	9,146	.....	311	97,562	Successful cases 75·7 per cent.
Total ...	1,96,400	20,783	11,951	1,162	311	2,30,607	

156. In the Central Provinces between the 1st May 1865 and 30th April 1866, 4,757 persons were vaccinated,—the results in 2,666 of that number having been reported as successful.

Vaccination in Central Provinces.

A separate Vaccine Department has been organized but recently; and difficulties have been met with, which will doubtless greatly diminish as the establishment acquires more experience, and the people become more alive to the great benefits of vaccination.

Success of Vaccination.

157. Even if these various Returns be accepted as accurate, the extent to which Vaccination has been as yet carried can have but a very small effect in checking Small-pox among the people. As was remarked in last Annual Report, "it is visionary to suppose that the Government can by its own action protect by vaccination more than 100 millions of people." The great aim, therefore, should be to lead the people to believe in it. No number of cases however large will have this effect, unless the greatest care be at the same time taken to ensure successful results. Very gratifying accounts have been received from the North-Western Provinces and the Punjab regarding the vaccine operations of the past year. In several of the districts, the people came readily and in great number to avail themselves of it. In one of them, in which inoculation had been much practised in previous years, the inoculators complained that the spread of vaccination had taken away their trade.

Hakeems induced to practise Vaccination.

158. The important fact that several of those who formerly earned their livelihood by inoculation have been induced in the Benares and Goruckpore districts of the North-West Provinces to practise vaccination, has been already mentioned. At Deogurh, during the prevalence of the late epidemic of Small-pox, the Civil Surgeon was able in some measure to overcome the prejudices of the people against vaccination and the interested opposition of the inoculators, by inducing the latter to use vaccine lymp in place of Small-pox virus. In one or two of the districts of the Punjab an attempt has been made to induce Native practitioners to abandon inoculation and practise vaccination in its stead. The progress of so radical a reform must necessarily be slow; but any advance in so important a movement is interesting and worthy of notice. In the city of Umritsur particularly owing to the exertions which have been made by the Civil Surgeon, Dr. Aitchison, two Hakeems are regularly practising vaccination. and have operated in 760 cases since November 1865. One or two other Native practitioners have expressed their willingness to do likewise. Such results cannot fail to aid in disabusing the minds of the people of the prejudices in which they are wrapped.

Sanitary rules for the people.

159. During the past year many fresh Municipalities have been formed and rules for ensuring proper conservancy passed for observance within the limits of their respective jurisdictions. But such measures apply only to the residents of cities, and do not affect the great mass of the population scattered over the rural districts. It will be well to state shortly the various measures which have been adopted by the various local Governments and Administrations for improving the sanitary condition of the people.

Rules recommended in the Punjab.

160. In the Punjab the following rules have been framed and recommended for general adoption :—

CONSERVANCY RULES IN TOWNS AND VILLAGES.

I. In every town and village, there shall be certain places specially set apart, in which the filth and rubbish of houses shall be deposited daily, to be removed by the sweepers and buried outside the town or village.

II. No individual shall have a dunghill, or heap of filth, either in his house, or in the yard attached to his house.

III. In every town there shall be certain places (in number according to the requirements of the town) set apart as public privies, and no person shall answer a call of nature in any other public place than such privy.

IV. No person shall answer a call of nature within 500 yards of the walls of a village (unless in a public or private privy). Round each village, posts or other conspicuous marks shall be placed to mark the line.

V. All privies, both public and private, within the walls of a town or village, shall be cleaned once a day, and the filth shall be taken out and buried without the walls of the town or village. Every house-holder shall be held responsible that the privy attached to his dwelling is cleaned once a day.

VI. Places shall be specially set aside for the burial of all filth or excrementitious matter, and these shall be at least 500 yards from the walls of the town or village.

VII. No holes shall, without specially written permission of the civil authorities, be dug inside any village or town, or within 500 yards of the walls of a village or town, to obtain mud for plastering or for any other purpose. If there be mounds or heaps, which it is desirable to level or remove, the land must be levelled and properly dressed.

VIII. All holes now existing inside a village or town to be filled in, and those within 500 yards of the walls to be filled in when practicable.

IX. It is strongly advised that drinking water should not be procured from ponds in which cattle bathe and wallow, and where it is possible to do so, certain wells should be specially set aside for drinking purposes, and at these no one should be allowed to bathe or wash clothes, unless such arrangements round the well are made as will render it impossible for the water used in bathing and washing clothes to run back into the well.

X. The carcasses of cattle that die shall be removed to a distance of not less than one mile from the walls of the town or village.

XI. No burial ground shall be within one mile of a town or village. No dead body shall be buried less than five feet below the surface of the earth. Wherever the relatives are too poor or neglect to burn or bury a body properly, it shall be done at the public expense.

XII. No dead body shall be set adrift on a river without proper precautions for sinking it, and no dead body shall be thrown into a canal or small stream or standing pool of water.

XIII. The number of sweepers necessary to carry out these rules shall be entertained for every town or village and paid from the *Dhurt* or other Village Funds.

XIV. In towns the police and in villages the head *lumberdars* are to be responsible that these rules are carried out.

XV. Deputy Commissioners are requested when going about the district to explain to the people the object of these rules, and to note whether attention is paid to them or not.

161. In the North-West Provinces, the following Resolution was recorded by His Honor the Lieutenant Governor on the 28th of February 1866 :—

Rules recommended in the North-Western Provinces.

"The sanitary condition of the cities and villages in these provinces has long attracted the attention of Government, and in order to improve the general health of the inhabitants, the necessity for good ventilation, drainage, and efficient conservancy arrangements has been very apparent.

2. Much has already been done in some of the large and populous cities through the agency of the Municipal Commissioners, but very much remains undone; and it is to be feared that, in the smaller towns, and generally in all the rural villages, cleanliness, ventilation, and drainage are altogether neglected.

3. In order to provide a remedy for this very objectionable state of things, the Lieutenant Governor has caused a brief memorandum to be drawn up showing the great advantages which have been derived elsewhere from attention to these subjects, and prescribing for adoption a few simple sanitary rules, to carry out which requires no costly agency, but only the expenditure of a little time and trouble.

4. Copies of this memorandum have been forwarded to every district, and the attention of all officers of Government is hereby called to this subject, which they are desired to take every opportunity of pressing upon the attention of those for whose instruction it has been prepared; and native officers and gentlemen may be assured that influential exertion in promoting the object in view will procure for them the marked approbation of Government.

5. Translations in Oordoo and Hindee are now being printed at the Government Press, and district officers are requested to indent at once for the number of copies, in either language, which they may require for general distribution."

It was further ordered that a copy of this Resolution be forwarded to the Director of Public Instruction, with the request that he will indent upon the Superintendent of the Government Press for a number of copies sufficient to supply every vernacular school with one copy in either language, and that he will direct the masters to make the subject one of special instruction in all Government Schools.

CONSERVANCY OF VILLAGES.

Every one knows how very many people die every year in our towns and villages from Cholera, Fever, and similar diseases, which are so prevalent during the hot weather and rains; but it is not generally known to you that these diseases, though due partially to the effects of climate, are, for the most part, caused by ignorance of certain simple rules. By care and cleanliness their ravages may be very greatly diminished.

2. It was discovered long ago in England that the main sources of Fever, Cholera, and other zymotic diseases, are—

I.—Want of ventilation and fresh air.

II.—Over-crowded houses.

III.—Bad and defective drainage.

IV.—The accumulation of filth, and decaying animal and vegetable substances in and about dwelling-houses, and the streets of towns and villages.

V.—Malaria caused by the exhalation of poisonous gases from stagnant pools.

VI.—The drinking water containing organic or mechanical impurities.

By a strict attention to drainage, ventilation, and cleanliness, using the word in its widest sense, most of these active causes of disease were removed. The health of the people of England

has consequently greatly improved. Fevers and Cholera have much diminished, and in many places have entirely disappeared. In London, 200 years ago, the average annual mortality was 7 per cent.; it has now, with a greatly increased population, diminished to 3 per cent.

3. Some may perhaps object that, though conservancy has answered well in England, it will not therefore be necessarily successful in Hindoostan; and that every country has its own customs. I reply that neither your religion, nor your customs forbid cleanliness. Furthermore, I will give you a signal instance of the success of sanitary rules here, almost among you, and if any one doubts my story, he can satisfy himself of its truth by enquiry.

4. Until 1853, Kumaon and Gurhwal were every year ravaged by Mahamurree. Whole villages were frequently depopulated, and many parts of the country became barren uninhabited wastes. In that year Dr. Pearson was appointed by Government to enquire into and remove the causes of this dreadful calamity. He persuaded the people to ventilate their houses, and to clean their streets. He had the filth and dirt, the accumulation of years, removed. Immediately the sickness began to abate. In less than three months it had entirely disappeared. For two years he continued the same measures, and during that time the very name of Mahamurree was not heard in the country. At length Dr. Pearson's services were required by Government for other work. The people, freed from supervision, fell back into their old dirty habits. Filth of every kind again accumulated. Immediately Mahamurree re-appeared. Again Dr. Pearson urged on them the necessity of cleanliness, and gave them some simple rules for conservancy, which they were wise enough to follow. In two months the plague entirely disappeared. Thus you see that twice have sanitary measures proved all-powerful for the extirpation of the plague, even when it was raging in full vigour. In 1853, it was carrying off hundreds of victims every week. In two months Dr. Pearson drove it away. In 1860, when the people fancied security and disregarded his advice, the plague re-appeared to punish them. Again sanitary measures were tried with complete success. The plague disappeared, and has never returned, and, it is to be hoped, never will return, till the people again, in their folly, neglect the rules laid down for their good.

5. Now Mahamurree is nothing more than a severe typhoid fever, similar to the disease which has of late years proved so fatal in the towns and villages of the plains, when many in a village have died of such fever. The ignorant people say that an evil spirit has got into the village, and fly from their homes. In such cases we agree with you in allowing that an evil spirit has got into your village, but we say to you—Drive him away; remove him; do not fly from him; and the name of that evil spirit is dirt and filth. A sweeper is stronger than he is.

6. Perhaps the Zemindars may object that as it is the cultivators and villagers who suffer, it is for them to take care of themselves. How can they take care of themselves, unless you show them the way? They are ignorant of the causes of the sickness which destroys them. Henceforward *you* shall not be able to plead ignorance as the excuse for your sinful and wilful carelessness. Turn over a new leaf, and do unto others as you would have others do unto you. In every religion, it is inculcated as one of the highest of duties to take care of those who are committed by God to our charge.

7. And it is not only your duty, but to your advantage, to take proper measures for the conservancy of your villages. Where the cultivator falls sick the crops suffer, and you have to bear your share of the loss. At all events, when the rents are paid in kind, where the tenant dies, you have to replace him, and probably to make advances to the new settlers, the re-payment of which is always uncertain. But no one will deny that sickness causes much loss, both of time and labor. To improve the health of your villages is to increase the happiness and comfort of your tenants and your own wealth. Thus, an attention to what is now urged on you will not only be advantageous to you in the next world, for it is surely a good work in God's sight to prevent numbers of men from dying of sickness, but it is also profitable to you in a money point of view. Besides this, if you live in the village, or its neighbourhood, or even pay it a visit occasionally, your own life is no less in danger than that of your tenants; and it is no *new* discovery that I am pressing on you. In many parts of India, the advan-

tages of having clean, well-paved streets, good drainage, good water, and freedom from objectionable nuisances, are to a very considerable extent appreciated by the people.

8. The isolated and uncombined efforts of individuals can do but little; all must help in the good work, for it concerns us all. When sickness begins, none can tell where it will end; no man can be secure of his own safety. Prevention is better than cure. All should do their best to keep sickness from their doors. A great system of successful sanitary administration cannot be created in a day. But it is a great thing to make a beginning. Every step, wisely taken towards the conservancy of your villages, will be a step towards better civilization, increased comfort, and a prolongation of life. Perhaps the Zemindars may complain that the cultivators do not mind their directions to keep the village clean; and it is very true that a Zemindar cannot keep the whole village clean, if the cultivators do not heed his directions, and choose to live in dirt and filth. You cultivators and villagers, whatever be your feeling towards the Zemindar, whether friendly or otherwise, never refuse to listen to his good advice to keep your village clean. Is Ambrosia to be refused if it is offered by an enemy?

I will now proceed to give you a few simple sanitary rules, which you can carry out with small trouble and less expense.

I.

The first requisite for health is pure air. Over-crowded houses cause bad air. The first remedy therefore is to open out streets, 15 feet wide, from north to south, and from the east to west, through your villages, so as to admit of a free current of air from every wind that blows. If these streets cannot be opened at once, care may be taken to have them where new villages are in the course of coming into existence, and widen the existing ones and make them straight, and to turn them to the four cardinal points, where it is found to be practicable to do so. The number of streets can be increased proportionally to the extent of the villages, but the more numerous they are the better.

II.

Whereas at present dirt and filth of every kind is allowed to accumulate in the narrow lanes and gullies, the hot sun causes it to putrify and decompose; and the reason why sickness is greatest during and just after the rains, is because at those times the process of putrefaction takes place most rapidly under the combined action of heat and damp. No cultivating ryot therefore should be allowed to store dung, or any vegetable refuse for manure, within or on the confines of the village. Let him collect it on the boundary of one of his fields, and cover it with dry earth to deodorize it. It will then become most excellent manure. He should allow no vegetable refuse, such as old stalks or straw, to remain in his cattle-sheds, which should be kept as dry and clean as possible. All such refuse should be carried out daily to the manure heap on his field.

III.

Non-cultivating residents of the village, who wish to retain their own refuse as manure, are at liberty to do so on condition of their removing it without the confines of the village; they will then store it in a place to be specially marked out for the purpose by the Zemindar, or his agent or headman.

IV.

If they do not wish to retain it, the Zemindar will be entitled to remove it through his own farm labourers, or other servants, to the common manure stacks, and to dispose of it as he pleases,—either using it as manure for his own land, or selling it. The manure store should be outside the village, and to the north or south of it. An enclosure for the purpose might be made at a cost of Rs. 3 or 4.

Then the village will be cleansed, and the Zemindars and the ryots alike will be benefitted. The last two rules are already established in Zillah Boolundshuhur, and have been entered in the administration paper of almost every village.

V.

The carcasses of dead cattle should not be allowed to remain in or near the village. Should the owner of the animal decline to remove it, the village *Chamars* (low caste people) will remove

the carcass to the manure store, and bury it in the heap, which they will then cover with dry earth. The quality of the manure will be greatly improved, while the foul smell will be no longer perceptible.

The hide will be sufficient remuneration to the *Chamars*.

Should the owner of the dead animal claim the carcass, he must have it removed, after it has been skinned, to his own manure heap, and there cover it with dry earth.

VI.

Allow no butcher to kill cattle anywhere within the village. A proper place for the purpose should be assigned near the manure heap. All the blood and refuse of the animal should be removed at once, and either buried in the manure heap, or in a trench dug for the purpose.

VII.

Those ryots who have no latrine on their premises should go to a distance from the village for the purpose of easing themselves. Those who have latrines can use them, but the village sweeper must carry out the ordure, and after depositing it in the common receptacle for filth cover it with dry earth.

VIII.

Every ryot should plaster the inside and outside of walls of his premises, once a year at least, in the month of October, as it is already done by many persons in the country. The walls will thus be kept in repair, and the premises kept clean. But the oftener they do this the better. It is to their own advantage to prevent their houses from falling down.

IX.

Let no *Chamar* prepare hides within the village; a special enclosure should be assigned for the purpose to the north or south of the village, within which they may carry on their tanning operations.

X.

On Tanks.

Tanks and swamps close to and within the village are dangerous to health, because unless the water is constantly changed, which is rarely the case, it becomes stagnant, and from the decomposition of the animal and vegetable matters it contains, poisonous exhalations are generated. The usual causes of the corruption of the water are as follows:—

1*st*.—The rotting and decayed leaves of the *Singhara* (a common water plant) grown in such tanks.

2*nd*.—Their being used to steep hemp in, the very object of such steeping being the decomposition of the external fibre.

3*rd*.—Their being used as places of resort by persons for performing natural offices.

4*th*.—Carcasses of dead animals are thrown into them, which, by their putrefaction, corrupt the water.

5*th*.—Pigs root up the mud, and kill the water-plants, which decay and decompose and taint the water.

Forbid each and all of these practices, and do your very best to keep the tanks near the village clean and pure.

XI.

Where it is possible, the tanks and swamps near the village should be drained, and the water carried off by channels into more distant tanks. The amount of land fit for cultivation will thus be increased; while at the same time you will be able to utilize the water for irrigation purposes.

Note.—Many zemindars will object that the prohibition of growing *Singhara* in the village tank will cause them a heavy loss. But this will not amount in many cases perhaps to more than Rs. 12 or 15.

XII.

Have all the miscellaneous pits and small stagnant ponds within the village gradually filled in, and for the future forbid such pits or holes being made on any pretext, for the water accumulates in them during the rains, and, by its stagnation, generates disease.

XIII.

On Wells.

Next to pure air, pure water, for drinking purposes, is essential to health. The water from stagnant jheels should never be used for drinking purposes. It is a slow poison. There should be a good well in every village;—if of masonry, so much the better, but a well without masonry is better than none.

XIV.

The well should be cleaned out every year at the beginning of May, and the mud which has accumulated at the bottom removed. According to the space available, limits should be fixed at a proper distance from the well, within which limits no one should be permitted to ease themselves, or to throw down dirty water, or refuse matter of any kind. For such liquid impurities filter through the soil into the well.

XV.

During heavy rain the surface impurities are washed into the well. To obviate this always have a protecting wall at least two feet high. To prevent the water from becoming tainted by leaves of trees falling into the well, have a small thatch over the mouth of the well sufficiently high not to impede the drawing of water, or the passage of air.

XVI.

As soon as any unusual amount of sickness is observed in any village, let the Zemindar or his agent,—and, where there is no agent, let the headman—send in information at once through the tehseeldar to the collector, who will at once cause an enquiry to be made into the causes of the prevalent sickness with the object, if practicable, of the removal or counteraction of those causes.

If villagers mischievously oppose the Zemindars in carrying out these good rules for the benefit of the public, let them remember that they are punishable under the provisions of the Penal Code; and the Zemindars are at perfect liberty to apply to the collector on plain paper for assistance. The collectors have moreover been directed to submit to the Government annually, through the Commissioners, the names of those meritorious Zemindars, who distinguish themselves prominently by introducing a system of cleanliness in their villages.

The Zemindars will find the task easier by allotting some land free of rent to sweepers, &c., for the purpose.

It is hoped that, if you will carefully and earnestly carry out these few and simple rules in your villages, sickness, though not entirely driven away, will be at least perceptibly diminished. Always bear in mind that all sanitary rules have for their ultimate object *cleanliness*. Whatever tends to promote cleanliness tends to promote health and increased longevity.

We simply tell you what is the right thing to do, and leave you to do it. The only reason for our pressing the scheme on your notice is because it is incumbent on every Government to take care of its subjects, when they are too ignorant to take care of themselves. Our only object is to save lives that are now needlesly and uselessly lost.

Information regarding epidemic sickness in the North-West Provinces.

162. In addition to these measures, steps have also been taken in the North-West Provinces to endeavour to obtain early information of the existence and progress of any epidemic disease among the people. Tehseeldars are required, in the event of any unusual sickness making its appearance,

to state in their weekly reports to the Collector the locality in which it has occurred; its nature, whether Fever, or Cholera, or Small-pox, with a rough approximation to the number of deaths, and whether the disease is generally fatal; the recoveries, numerous or few, in proportion to the number of persons attacked.

Sanitary measures in the Central Provinces.

163. In the Central Provinces every opportunity has been taken to impress upon the people the expediency of keeping their villages clean and of attending to conservancy. In recommending such Rules as the following for general adoption, here as elsewhere, no compulsion is to be attempted. The object is simply "to call attention to facts of which the people are already aware, to convince them of the necessity of taking greater precautions for the public health, and of gradually obtaining their co-operation therein."

VILLAGE CONSERVANCY RULES.

General Remarks.

Disease is often generated, and its virulence is increased by breathing impure air, or drinking impure water.

2. Air and water are rendered impure by contact with, or proximity to, decaying animal or vegetable matter. If such decaying matter be damp when it comes in contact with air, its effect upon the air is more noxious than if it were dry.

3. If the air breathed by the people of a village, and the water they drank, could be kept pure, such a village would have every chance of escaping disease; and if disease came to such a village, it would come in its mildest form.

4. The evil effects of bad air are always greater at night than in the day. The effect or evil influence of bad air does not reach to any distance, unless carried by wind: if, therefore, the matters which make the air bad can be removed to a distance from the village, and pure currents of air can pass through the village, then bad air and its evil influence will not reach the village.

5. The following rules for securing pure air and pure drinking water to a village are prescribed:—

Concerning Villages.

6. If there are any trees in the village site, or within one hundred yards round it, cut off every year their branches within 20 feet of the ground; lop and prune any branches which may hang down to within 12 feet of the ground.

7. But if there is a belt of trees or jungle between a village and a tank, it should be preserved as a barrier between the village and the bad air of the tank.

8. Let no bushes, high grass, weeds, or underwood grow in the village or within 100 yards of it. If there are any hedges in the village, or within a hundred yards of it, let them be trimmed and cut down twice a year to a height of not more than 3 feet.

9. Let the holes in every enclosure be filled up with earth, and the enclosures levelled; and let the ditch to carry off rain water from the enclosures be made. Let there be no holes anywhere in the village, or within one hundred yards of it; if there are any, let them be filled up. Let the ditches for draining rain water through the village be put in order twice a year; once in June, and once in August.

10. Any heaping up of refuse inside the village must be entirely stopped, and existing heaps must be removed outside.

Concerning Manure and Refuse.

11. Let every man carry the sweepings of his house, his enclosure, and his cow-house, early every morning to a hole in a fixed spot 100 yards outside the village. If tenants wish to keep their sweepings to manure their fields, the landlord must allot them places to throw their refuse. These sweepings will be more useful as manure, if they are thrown into and kept in holes. Such places to be to the east of the village, and not to be within one hundred yards of the village, or within fifty yards of any tank or stream.

12. The making of cow-dung into cakes for fuel, or the drying or stacking of it when made, is not to be allowed within one hundred yards of the village.

13. The landlord is to assign to each sex a locality, distant, at least, three hundred yards from the village, to the eastward, and in these localities alone may the villagers answer the calls of nature. Such localities should be some distance from all roads or paths. And on no account should villagers or travellers be allowed to obey the calls of nature on a road or path. If any villager erects a privy in his own enclosure, he will have daily to remove its sweepings to the refuse holes outside the village.

14. The landlord will assign a place for travellers to pass the night outside his village; but if the place be within one hundred yards of the abadee, he will take care that their refuse is removed in the morning to some refuse heap outside the village.

15. When cattle or any animals die in or near the village, the watchman, or whoever receives the skin, must drag the carcass, before skinning it, to some place east of the village and distant three hundred yards from it.

Concerning Wells.

16. Where villagers drink from wells, a sufficient number of wells must be set apart for drinking purposes—no washing of clothes, or bathing, or watering, of cattle, must be allowed at any wells so set apart. A wooden grating should be placed over drinking wells to prevent leaves and dirt from getting in.

17. The forming of muddy pools round any wells in the village should be prevented: and cattle should be watered at some well outside the village if there is no tank or stream at which they can be watered.

18. If a well can be dug by taking advances or by any other way, a well for drinking water should be dug in every village; for beyond all doubt well water is, as a rule, more wholesome than tank or river water.

Concerning Tanks.

19. Where a village drinks tank water, and there is more than one tank in the village, one tank must be set apart for drinking purposes alone, and must be cleared out and deepened by the labor of the villagers once every year just before the rains. This tank must be staked or hedged round: and no washing, bathing, or cattle watering must, on any pretence, be allowed at this tank. If possible, stones should be put down along the paths and sides of the tank where people go to draw water.

20. Where there is only one large tank in a village on which the people depend for drinking-water, and no possibility of digging another tank or sinking a well, a part of that tank nearest the village must be set aside for drinking. That part must be staked off towards the village, and no washing, bathing, or cattle watering must, on any account, be allowed there.

21. Cattle must be watered at some tank distant three hundred yards from the village; or, where there is only one tank, they must be watered at the end furthest from the village and the drinking place. Washing and bathing too must be done at some distance from the place staked off for drinking.

22. When there is only one tank in a village, the steeping of hemp, or growing *Singarah* in that tank, cannot, on any account, be allowed. *Singarah* must never be grown in drinking-

water tanks. Where there are several tanks, hemp must be steeped at the tank furthest from the village.

Concerning Streams.

23. Where a village drinks water from a river or stream, the whole of the village washing, bathing, and cattle watering must be done below the village, and water for drinking must be brought from above the village.

24. Where there is a stream or river, hemp must not be steeped above the village, or above the place where the cattle are watered. If another village is on the same stream within two miles down, steeping of hemp in the stream cannot be allowed at all.

Concerning Burials and Cremation.

25. Let every Landlord assign a small locality, three hundred yards from, and to the east of, the village, and at a distance from any road, tank, stream, or well, where the bodies of Hindoos may be burnt and where the bodies of poor Hindoos may be buried. If there are any Mussulmans in the village, they must have a burying place chosen under similar conditions.

Concerning Epidemics.

26. When any epidemic disease is about, all the villagers must thoroughly cleanse their houses and enclosures, within and without, twice a week. If the walls of any of the houses are built of bamboos or stakes, such walls must be plastered once a week with fresh mud.

27. When epidemic disease is in, or near a village, fires of dry grass, straw, twigs, cow-dung, wood, or dry leaves, must be burnt outside every house door at nightfall.

28. When an epidemic attacks a village, the sick should, as far as possible, be put in separate houses from the healthy. Special care should be taken to remove, to a distance from the village and to bury under earth, as quickly as possible, the excretions of the sick, and to burn or bury the bodies of any who may die of the disease.

29. When an epidemic disease is about, excretions must always be buried under dry earth as soon after they are passed as possible.

In persuading the people to adopt these measures for their own good, it has been resolved to proceed with patience and judgment, to commend the simplest and easiest of them to begin with, and as they approve themselves to the people gradually to introduce the whole code. The Chief Commissioner on his tour this year has found evidence that the rules are gradually being acted upon, even in the outlying tracts, and there appears no doubt but that their more important provisions are being generally carried out.

Sanitary measures in Bengal.

164. In Bengal several fresh Municipalities have been formed during the year under the provisions of Act III of the Bengal Council of 1864. The model bye-laws which have been circulated for adoption by the Municipalities contain the following provisions on matters of conservancy :—

1. The external roofs and walls of any hut, or any other building whatever, about to be erected or renewed in or near any public highway, shall not be made of grass, leaves, mats, or any other inflammable material.

2. No person shall dig or make, or cause to be dug or made, in any place, any tank, pond, well, ditch, water-course, or other excavation, without the written permission of the Commissioners.

3. No person shall put, or cause to be put, on any house, or other building, any spout, or other thing, intended for the conveyance and discharge of water, which shall be so placed that the water discharged therefrom shall be thrown or fall upon any public road or thoroughfare.

4. No person shall deposit, or cause to be deposited, in, or by the side of any public drain, any substance or thing whereby the said drain is, or may be, in any way obstructed.

5. No person shall construct, or place over, or by the side of, any public drain, any bridge, platform, building, or structure of any kind, except by and with the written permission of the Commissioners, and in such manner as they shall direct.

6. Any person being the owner of any fallen trees or shrubs, or the owner or occupier of the land on which such trees or shrubs may have been growing, shall remove them after notice within the time prescribed by the Commissioners.

7. If any house, wall, or other erection, or any part thereof, fall upon any public highway, or into any public drain, the owner of such house, wall, or erection, shall remove it after notice, within the time prescribed by the Commissioners.

8. No. person shall prepare any channel, or convey water by any channel across any public thoroughfare, except in such manner as shall have been first approved by the Commissioners.

9. No person shall steep in any tank, or ditch, within municipal limits, any jute, hemp, or other vegetable matter, likely to render the water of such tank, or ditch, offensive or noxious to the neighbourhood.

10. No person shall, without the written permission of the Commissioners, set up any obstruction in any *nullah* or water-course; and the Commissioners may order the removal of any such obstruction on grounds of public health.

11. The owner or occupier of any part of the bank of any *nullah* or water-course shall keep it free from filth, dense vegetation, or other obstruction, and shall at all times allow the Commissioners, or any of their servants duly authorized, to have access to such nullah or water-course for any purpose of public conservancy.

12. No person shall allow any pigs to be at large, or keep them otherwise than in closed styes.

13. No owner, occupier, or farmer, of any bazar or shop, shall keep the same in other than a clean and proper state; and every such owner, occupier, or farmer shall, without any delay, cause any meat, fish, or vegetable matter in a noxious state or unfit for food to be at once removed to a place to be notified to him by the Municipal Commissioners. No such owner, occupier, or farmer shall obstruct any person, appointed by the Commissioners for that purpose, from entering and inspecting any such premises at any time between sun-rise and sun-set.

14. No person shall in any way obstruct, or allow to be obstructed, any of the lanes, walks, bye-ways, or other thoroughfares in any bazar, by exposing for sale or accumulating anything on any such lane, walk, bye-way, or thoroughfare.

15. Every owner, occupier, or farmer of any bazar shall, within 14 days after receipt of notice from Commissioners, provide such latrines and urinals as, in the opinion of the Commissioners, may be necessary to secure the cleanliness and health of the bazar.

16. No person shall perform any office of nature in any place outside private premises, other than such as may have been appointed by the Commissioners, provided that such places have been set apart by the Commissioners.

17. No person shall build, or cause to be built, or keep, after prohibition by the Commissioners, any *tattee*, privy, or urinal within * feet of any public road or street, or in any compound so small as not to admit of that distance being maintained.

18. No person shall make the door of any private privy to open directly on any public thoroughfare; and any person having the door of his privy so constructed, shall alter it upon receipt of notice to that effect from the Commissioners.

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* To be filled up at the discretion of the Commissioners.

19. No person shall carry night-soil through the streets, except between the hours of* and* , or otherwise than in a closely covered receptacle, or use any place, other than those approved by the Commissioners, for the purpose of depositing such night-soil.

20. No person shall suffer any offensive matter from any manufactory, place of business, stable, or cook-house to flow into any river, nullah, canal, tank, or surface drain.

21. No person shall keep filth, dirt, dung, bones, dead bodies, rubbish, or other matter of a noisome kind, for more than twelve hours, in such a place or manner as to cause annoyance to any person, or injury to the public health.

22. All dust, dirt, and rubbish of every kind, the removal of which is undertaken by the Municipal Commissioners, shall be deposited on the side of the road near the entrance of the premises from which it has come, between the hours of * and *.

23. No refuse resulting from any business, trade, or profession shall be removed by the Municipal Commissioners, except on payment for removal at such rate as the Commissioners may determine; and any expense incurred on this account shall be recoverable as a debt due to the Commissioners.

24. All dirt, dust, ashes, rubbish, sewerage, soil, dung, and filth, collected from the highways, houses, privies, sewers, and cess-pools by the Municipal Commissioners, shall be the property of the Commissioners, who shall have power to sell or dispose of the same as they may think proper, and the money arising from the sale thereof, shall be applied to the purposes of the District Municipal Improvement Act.

25. No person shall put on any wall, or on any roof of a house, or on any bank, or tree, or on any other place or thing facing any road or public place, any preparation of dung to be used as fuel, or for any other purpose.

26. Every person, within whose premises any animal may die, shall, within* hours after its death, or, if death occurs at night, within two hours after daylight, either remove at his own expense the carcass to such place as may be set apart by the Commissioners for the reception of such carcasses, or report its death to the Conservancy Overseer of the division within which such premises may be situated; and in such latter case shall pay to the said Overseer the expense of removing the carcass at such rate as the Commissioners may determine; and in cases where the said person is not the owner of the animal, and the owner is known, the owner shall alone be responsible for the payment of such expense, and such expense shall be recoverable as a debt due to the Commissioners. No overseer, when called upon, shall neglect to remove a carcass.

27. No person shall let loose, or cause or allow to be let loose, or allow to get loose, any diseased or worn-out animal into any highway, or into any place whence such animal can escape into any highway.

28. No person shall deposit, or cause to be deposited, any carcass, or any part of a carcass, in any place other than such places as may, from time to time, be appointed by the Commissioners for the reception of such carcasses.

29. No person shall dispose, or cause to be disposed of, any corpse, or any part of a corpse, otherwise than by burning or burying it at or in some lawful burning or burial-ground.

30. No person shall bury, or cause to be buried, any corpse, or part of a corpse, in any burial-ground in a grave constructed of masonry in such manner that the top of the coffin, or the body, where no coffin is used, shall be at a less depth than * feet from the surface ground.

31. No person shall bury, or cause to be buried, in any burial-ground, any corpse, or part of a corpse, in a grave not constructed of masonry which shall be less than * feet deep.

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* To be filled up at the discretion of the Commissioners.

32. No person shall build or dig, or cause to be built or dug, any grave in any burial-ground at a less distance than* feet from any other existing grave.

33. No person shall build or dig, or cause to be built or dug, a grave in any burial-place in any other line than that marked out by the Commissioners.

34. No grave once used shall be opened for the burial of another body without the permission of the Commissioners.

35. Every person who shall bring or convey, or cause to be brought or conveyed, any corpse, or part thereof, to any burning-ground, shall burn, or cause the same to be burnt, within* hours after its arrival at the said burning-ground.

36. No person, when burning, or causing to be burnt, any corpse, or part of a corpse, in any burning-ground, shall permit the same, or any part thereof, to remain without being completely reduced to ashes; or shall permit the clothes, or other articles connected with the burning of such corpse, to remain at or near such burning-ground, unless the same be completely reduced to ashes.

37. No one shall carry a corpse, or part of a corpse, through any highway, unless it be decently covered and totally concealed from public view.

38. No person while carrying any corpse, or part of a corpse, through the precincts falling within municipal limits, shall deposit it on or near any public highway for any purpose whatever.

39. Every corpse, or part of a corpse, that has been kept or used for purposes of dissection, must be removed in a closed vehicle.

40. No person shall picket animals, or collect carts, or form any encampment upon any public ground, without the permission of the Commissioners.

For infringement of each of these Bye-Laws, suitable penalties have been assigned.

His Honor the Lieutenant Governor concurs with the Sanitary Commission in thinking that for towns and large communities Act III (B. C.) of 1864 already provides nearly all that is necessary. For villages or groups of villages in the interior, other orders will be issued.

Sanitary measures in British Burmah.

165. In all towns of Pegu and Tenasserim, containing three thousand inhabitants and more, municipal funds are raised, and the Municipal Authorities adopt such sanitary measures with respect to each as circumstances seem to require and the state of the funds allow. In sea-port towns the Civil Surgeon of the district has been appointed Health Officer, and his duties will be seen from the following provisional rules which have been framed for his guidance :—

Provisional Rules for the guidance of the Health Officer of the town of , dated Rangoon, 14th March 1866.

1. The Civil Surgeon is ex-officio the Health Officer. His duties do not extend beyond the limits of the town and station for which he is appointed.

2. For the present, and while no special establishment is available, the duties of the Health Officer will be confined to bringing to the notice of the Magistrate or of the Police such instances of breaches of the law connected with the public health as he may deem advisable.

* To be filled up at the discretion of the Commissioners.

3. The state of the public drains, of latrines, of the public markets, and the provision sold therein, the slaughter-houses, the supply of water for drinking and otherwise, and the manner in which the conservancy officers do their duty will occupy his attention, and he will promptly take measures regarding them, or any other points he considers necessary, in the manner provided in Rule 2.

4. All cases of infectious disease, whether in the town or shipping, should be promptly brought to notice, and his recommendation thereon made to the Magistrate.

5. In the case of Cholera he should report forthwith whether he recommends that medicine should be distributed at the Police Stations and other houses for immediate use, or any other measures adopted.

6. All letters and references by the Health Officer will be made through the Town Magistrate.

7. At the close of the official year (30th of April), he will make a report on the health of the town, and on the measures which he has taken during the year either to prevent or to check disease, or to bring to notice breaches of sanitary rules, together with the results.

8. It of course is understood, as already ordered, that the remarks upon the birth and death returns are to be separate from the Health Report.

(Signed) A. P. PHAYRE,
Chief Commissioner of British Burmah.

The Chief Commissioner is of opinion that the time has not yet arrived for issuing sanitary rules for observance in the villages generally, but the necessity for sanitary measures is being kept steadily in view.

Sanitary improvements in Calcutta.

166. In Calcutta considerable progress has been made in sanitary improvement during the year. Masonry channel drains and culverts, which had been allowed to silt up and had remained closed for years, have been opened up to the great improvement of the drainage, especially of the northern division of the town; more than $2\frac{1}{2}$ millions of cubic feet of earth have been removed from the drains during the year. "The accumulation of past years of neglect may thus be said," remarks the Chairman of the Municipality, "to have been cleared off, and in future the deposits of the year will alone have to be attended to."

Measures have been matured for the erection of public necessaries on an approved plan. Arrangements are also in progress for the better disposal of the night-soil, and the present most objectionable practice of throwing it into the river in the midst of the shipping will, it is hoped, soon be altogether prohibited. A careful supervision has been exercised on the sale of articles of food and drink, and large quantities that were considered unfit for human consumption have been condemned. Many of the markets have been improved, the full sum required for rendering the burning-ghaut inoffensive and innocuous has been subscribed, and the improvements will commence without delay. The great works connected with the water-supply, the drainage, and sewerage of the town are all in progress, and the slaughter-houses are in course of construction. It cannot be doubted that much has been done to improve the sanitary condition of Calcutta; but considering the immense natural obstacles which have to be overcome, combined with the indifference and even active opposition to any improvement on the part of the people whom all these operations are chiefly intended to benefit, the task which the Munici-

pality has to perform is one of no ordinary difficulty. Nor are indifference and opposition confined to the lowest class of society. Speaking of one of the richest native quarters of the town, the Health Officer, in his last Annual Report, remarks;—"It is indeed unaccountable how men, who by their position may be supposed to possess a certain amount of knowledge, who are abundantly wealthy, and whose avocations bring them into daily contact with educated Europeans, should be so careless in their habits, and so eager as it were to shorten their lives, not only by an utter disregard of the commonest rules of hygiene, but also by constant opposition to every effort to suppress the nuisances which abound in their dwellings; and though last year the population of that part of the town was decimated by cholera and small-pox, this has in no way tended to render them more careful."

The Jails, Police Hospitals, Lunatic Asylum, and several of the other Native Institutions in Calcutta and its neighbourhood were recently visited; many great improvements have of late been introduced, and the discreditable state of things described by Mr. Strachey has ceased to exist.

167. The report of the Commission with regard to the cause of excessive mortality on board emigrant vessels, and the measures which it recommended for preventing, so far as possible, the recurrence of so great a calamity, have been already alluded to. It only remains to notice a few of the other chief questions concerning the welfare of the general population which have been discussed.

Latrines for Native Towns and Villages.

In a Report which was submitted for the consideration of the Government in the Home Department, the urgent necessity for erecting public latrines in all towns and villages as the only remedy for effectually putting a stop to the systematic breaches of all sanitary laws by the native population was insisted on. A plan was suggested for adoption. The best means of management, the manner in which the sewage ought to be disposed of, and other points involved in this great sanitary question were discussed, and all the practical recommendations which appeared to be necessary were made.

The Report was extensively circulated to all the Local Governments and Administrations, and a translation for the immediate benefit of the native population is in preparation. No information has yet been received as to the steps which have been taken towards carrying out the recommendations of the Commission. A work of so great magnitude can proceed but slowly, and it will take many years of persevering instruction before the people will be induced to desert the customs of their forefathers.

State of the Sailors in Calcutta.

168. A full report was submitted to the Government of Bengal regarding the state of the sailors in Calcutta. The distress and destitution of many of this class are facts within the knowledge of the whole community, and the jails and hospitals of Calcutta both afford lamentable evidence of their unsatisfactory condition. It appeared to the Commission that some measures might be adopted for improving this state of things. One of the most essential appeared to be that owners of ships should be prevented from discharging Crews in the Port unless they provide for the support of the men and for their

re-shipment home when no employment can be found for them. A rule was also recommended to the effect that when sailors are imprisoned for disobedience of orders or other misconduct on board ship, and they are left in jail after their ships have sailed, it should rest at the discretion of the Magistrate to enforce the deposit by the Captain of a sum of money sufficient to pay for the passage of the men home in cases in which it is proved that the misconduct of the sailor was attributable to bad or injudicious treatment on board. The advisability of more careful statistics regarding the mortality of the sailors and the necessity for a better supervision of the boarding houses and liquor shops were strongly insisted on. The propriety of establishing river-side dispensaries for the treatment of cases of sudden and severe sickness, as suggested by the Revd. Cave-Brown, was also brought to the notice of the Lieutenant Governor. But the measure which the Commission considered most necessary for the better care of the sailors was the appointment of a Port Magistrate whose special duty it would be to keep a watch over them. The work of the Shipping Master is already more than he can satisfactorily perform, and it seemed very desirable that a special Officer should be appointed whose duties would be, not only to try cases occurring amongst the shipping, but to keep a constant eye on the vessels in port, and to watch over the interests of the sailors in every way in his power.

The observations and orders of the Government of Bengal on this Report have lately been communicated. It appeared to the Lieutenant Governor that the main root of the evils which had been shown to exist consisted in the facility afforded to masters of vessels, up to a very late period, of discharging their Crews in the Port of Calcutta—subject which had already engaged the attention of the Government, and on which the Board of Trade had been addressed by the Government of India. "The Shipping Master, it seemed, had full authority under the law to withhold his sanction to the discharge of a seaman when he had reason to believe that such a seaman would become chargeable to the State. It appeared, therefore, that the excessive number of unemployed seamen lately in the Port of Calcutta had its origin in an imperfect exercise of this authority." With regard to the desired accuracy in the statistics, His Honor did not think that any change in the law was necessary, the master of a vessel being bound on entry to answer all questions relating to the vessel which may be put to him by the Collector of Customs. Such questions regarding the crew might be furnished to the Shipping Master in a printed form which could be drawn up in communication with the Sanitary Commissioner, and in the same way the state of the crew on its departure, and the fate of any of the crew found missing, might be ascertained before port-clearance was given. In point of fact, all the desired information was already given, but had not been collected by the Shipping Master, owing to a pressure of work. Although not agreeing with the proposal to appoint a Port Magistrate, His Honor was of opinion that the Officers of the class who have hitherto held the office of Shipping Master have not been competent to act as head of what really has become a very important department. Previously to 1859, the duty of Shipping Master was performed by the Collector of Customs, and the Lieutenant Governor was decidedly of opinion that he should be appointed ex-officio Shipping Master, the present Shipping Master becoming his deputy. This proposal has been recommended to the Government of India.

Although the views of the Sanitary Commission regarding the remedies for the condition of the sailors have not been adopted by the Government of Bengal, the existence of the evils themselves has been fully admitted, and there can be little doubt that the attention which has been drawn to the subject, and the measures which have been proposed by the Lieutenant Governor, will produce good results. The subject is one of such importance, and thrusts itself so prominently on the attention of the European inhabitants of Calcutta, that it is impossible it should be lost sight of; the experience of the next twelvemonths will, better than any theory, enable the Government to come to a satisfactory conclusion regarding the sufficiency of the means adopted.

Cholera Congress at Constantinople.

169. The questions with regard to the rise and spread of Cholera in India, and the manner in which it is conveyed from Asia to Europe, have engaged the attentive consideration of the Commission. The various Local Governments and Administrations have been requested to furnish all the information in their power with regard to the history of this disease so far as it is known within the limits of their respective provinces, and full particulars have been asked for regarding the number of pilgrims who annually proceed to Mecca, the routes by which they usually travel, the number that went in 1865, the ports from which they sailed, their sanitary condition during the voyage, and especially their freedom or otherwise from Cholera. The Medical Department and the Sanitary Commissions for Bombay and Madras were invited to co-operate in this investigation, and to offer any suggestions which they believed would be of service. Several replies to these enquiries have been received, and as soon as those still due shall have arrived, the whole question will be considered. Although much valuable information will no doubt be collected, it cannot be concealed that the subject is one peculiarly beset with difficulties, with regard to which reliable facts are wanting.

Re-constitution of the Sanitary Commission.

170. It only remains to be noticed that since the close of the year, the Sanitary Commission has been replaced by a Sanitary Commissioner with a Secretary. Although, therefore, the work of the past year was the work of the Sanitary Commission, I have the honor to submit this Report.

I have the honor to be,

SIR,

Your most obedient servant,

G. B. MALLESON, *Major*,
Sanitary Commissioner for Bengal.

J. M. CUNINGHAM, M. D., *Surgeon*,
Secretary to the Sanitary Commissioner
for Bengal.

APPENDICES.

APPENDIX.

Dr. W. Walker's *Description of* Contagious Fever *as it appeared in the Agra Central Prison in* 1860.

Two-thirds of the men coming under treatment asserted that their illness commenced with a shivering fit. While acknowledging the truth of this statement as regards the apparent initiatory symptom, I have good reason to believe that in most cases a previous period of malaise was passed through, either unobserved by the men themselves, or, when the disease became so fatal, concealed by them to avoid being sent to hospital. Besides the evidence on this head gathered from the gangsmen, the rapidity with which great bodily weakness supervened points to a period during which the fever poison had been lurking in the system and depressing the vital energies. When the shivering attack came on during the night, the men were hardly able in the morning to walk to hospital, and never able to carry their own bedding. The expression of their faces rapidly altered; they looked wearied, listless, and unconcerned, and were already possessed with the idea that they would never recover from the disease. In strong men, the countenance was at first full and flushed, the veins protruding from the forehead, and the eyes suffused, or even bloodshot. Headache was by no means a constant symptom, but, when present was complained of across the forehead. Pains in the back and limbs were constant and severe. The skin was hot, dry and pungent; the pulse at first full and bounding, and varying from 110 to 130 in frequency. The tongue, after a few hours, became covered in the centre with a dry, white fur, the edges and tip becoming bright red; in a few cases it remained dry and glazed, but without fur throughout the attack; acquiring a dark brown line down the centre as the disease advanced, and becoming a little furred on the approach of convalescence. Vomiting occurred in many cases in the early stages; very often the belly was or became tense and swollen, with considerable tenderness in the epigastrium. The bowels were for the most part constipated; but a slight purgative was often sufficient to set up uncontrollable diarrhœa. The urine was scanty and high-coloured, passed with considerable difficulty, and often completely retained. Throughout the epidemic the respiratory organs were much affected; mostly so, however, at its commencement in the month of March. At that time scarcely a case came into hospital without showing this complication most violently.

The nervous centres rarely became affected for the first three or four days, but the muscular depression increased hourly. The men lay on their backs with outstretched limbs, unwilling or unable to move; the hand when raised shook, and could with difficulty be directed to the wished-for position; the tongue was protruded tremulously and with apparent effort. By-and-bye the functions of the brain began to be impaired. The patient lies dozing uneasily, his eyelids are closed, but he does not sleep; if you forcibly open them, he complains and turns his head away from the light, and you can see that his pupils are fixed, sometimes contracted, sometimes dilated. At a still later period you require to shake him and speak sharply to attract his attention; but even then he would answer rationally, only he is unwilling to be disturbed, and lapses again into the same dozing state. About the fifth day he gets rapidly worse; he is incapable of the slightest muscular exertion, and slips down off his bedding on to the centre pathway of the hospital; his pulse becomes hourly smaller, weaker, and more rapid; sordes collect about his teeth and gums; his tongue becomes dry and baked, the fur browns and cracks, but does not thicken much; his throat is so parched that he is made to swallow with the greatest difficulty; he loses his voice and speaks only in a whisper; he complains of no pain. Gradually low muttering delirium supervenes; he becomes insensible to all surrounding objects, and cannot be roused; passes his stools involuntarily, and dies comatose.

The above is a rough sketch of the course which a majority of the fatal cases ran. With the few exceptions of men who died within 48 hours after their admission into hospital, the crisis of the disease occurred on the fifth, seventh, or ninth day. At those periods, either the

patient's system was overpowered by the disease, and he died comatose, or the fever left him, and he became convalescent. Usually there was no marked crisis; sometimes an increased flow of urine, less frequently a profuse perspiration, but very often an increased discharge from the bowels. Neither the patient nor his attendants could tell exactly at what time the fever left him. Within a couple of hours his skin became soft and slightly moist, from being hard, dry, and pungent; his pulse lowered in rapidity, and became soft; his tongue and mouth moistened; he complained less of thirst and dryness of throat. His countenance in a few hours became quite altered. Instead of the restless, twitching irritability of his roused condition, and the dull, listless, quiet in which he lay when undisturbed, his face became quiet, relaxed, and placid; his eyes were opened, and tolerant of light; he lay on his back equally helpless as before, but beyond weakness and a feeling of being bruised all over, he declared himself well.

Often the cases now went on well, and the men acquired strength day by day; but in a large number, after the third or fourth day of convalescence, a change occurred. This arose semetimes, no doubt, from indiscretion on the part of the patient, but more frequently from the imperfect elimination of the morbific matter from the system. All the former symptoms return with increased violence; the tongue, which had been moist and gradually cleaning, becomes again dry and fissured, fur collects and thickens, and a brown crust forms rapidly. All the typhoid symptoms are intensified: the dry, pungent heat of the skin; the small, quick thready pulse; the restless, semi-delirious wakefulness; and finally, the cold, clammy sweat that ushers in the quiet of coma.

If the patient lived over 48 hours of the relapse, nature seemed to make an effort to throw off the poison by a profuse discharge from the bowels. At first he passed large quantities of dark gravelly-looking fæces, with a most offensive odour; this rapidly changed to shreds of mucus, floating in slime and streaked with blood, and often to pure blood. Although several cases rallied on the occurrence of this discharge, they generally perished subsequently from chronic dysentery.

Four or five cases exhibited features so distinct from any detailed above, that they demand separate notice. With them, after the fever had lasted from 24 to 48 hours, all the symptoms seemed to subside; the patient's skin became quite cool; his pulse quiet and soft; his breathing easy and natural. He lay on his back, and complained of nothing; only his unnaturally quiet condition attracted attention. His eyelids remained closed, but the eye had no intolerance of light; the pupils were either contracted, or dilated and fixed. He could answer questions when roused, but did so very unwillingly. The patient usually lay in this state during three or four days without taking food, and at last passed quietly from sleep into death. The *post-mortem* examination in these cases revealed serous effusion to a great extent in the ventricles and under the piamater of the brain.

In a few cases the disease was so rapidly fatal that the men died in a few hours; the blood-poison seemed instantaneously to overpower the nervous system. These extreme cases were met with mostly amongst the hospital attendants—strong, vigorous men, but who were of necessity much exposed to the contagion. The attack in this form was often ushered in by intense nausea and reaching; but none of the men complained of tenderness on pressure over the epigastrium, indicating that the cause of the vomiting and nausea lay in the cerebrum. Nine men died within 24 hours, and 14 men within 48 hours, of their coming under observation.

Before passing on to consider the sequelæ of the disease, I may advert here to an observation having reference to the sequence in which the prime characteristic of the epidemic—namely, congestion of the internal organs—occurred. In the end of February and the early part of March my attention was attracted chiefly to the respiratory organs. All the symptoms pointed to the lungs as deeply involved in mischief: wheezing and hissing sounds were to be heard all over the chest; and the *post-mortem* examinations, as will be seen, sustained the diagnosis. Taking into consideration that at the time the mean daily range of temperature was 36·4, the prominence of the lung affection was scarcely to be wondered at. After the second week in March the lung complication lessened, or, at all events, became shrouded in the more imminent danger arising from brain congestion. This vascular congestion, with the serous and even apoplectic effusions in the head, were combated with the utmost difficulty. This marked pre-

eminence of head disturbance, in its turn, yielded to another group of symptoms originating in congestion of the abdominal organs, more especially of the liver and mucous membrane of the bowels. This additional complication occurred after the first week in April, and continued, with greater or less prominence, until the fever began to abate in the end of May. Pain was complained of on pressure over the right hypochondrium and epigastrium; a jaundice tinge of the conjunctivæ and of the various secretions was oftener visible, abdominal tenderness and tympanitis were more common; and hiccup, sometimes uncontrollable, accompanied or succeeded to sharp attacks of diarrhæa or dysentery.

By far the most common sequelæ of the fever was dysentery or dysenteric diarrhœa. In a few cases this showed itself very early, and rapidly carried off the patient; but most commonly it did not arise until after some days of convalescence, and seemed to have its origin in that flux from the bowels that occurred frequently at the crisis of the case. The *post-mortem* appearances varied with the stage at which the patient died; but in no respect did the state of the mucous membrane differ from what is ordinarily observed in cases of idiopathic dysentery. I need only mention that, out of 299 deaths resulting from the epidemic, 76 were occasioned by the subsequent diarrhœa, to show how very prevalent and fatal this complication proved. In the general congestion of the internal viscera which accompanied the fever, the respiratory organs suffered severely, and had in many cases laid in them the foundation of disease that could not but terminate unfavourably. Sometimes low pneumonia supervened, and the patients lingered on for a long time, and appeared to perish of debility and general malaise. In six of these cases which I examined after death, grey hepatization was found in a portion or the whole of one lung. Confirmed phthisis has resulted in five cases; and I have no doubt that in many others tubercular deposits have taken place, which will, sooner or later, carry them to their graves. Swelling of the parotid gland occurred very frequently at the crisis of the fever. Twenty-six marked cases came under my observation; and many other patients complained of pains and stiffness in the parotid region, of whom I took no note. Of the 26 cases, 10 resulted in suppuration; in the rest the swelling gradually resolved itself under remedial measures. Erysipelas of the head followed the parotideal swelling in 4 cases, 2 of which proved fatal; while 2 of the cases in which suppuration occurred died from exhaustion. Permanent weakness of mind resulted from the fever in one case. Chronic rheumatic pains of the limbs and œdema of the lower extremities have been of frequent occurrence, and very intractable.

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I found convalescence tedious in almost every case, even where no relapse had occurred. Great weakness of the digestive powers, constant vomiting after meals, irregularity of the bowels and the passage of indigested food, indicated by their persistence the great shock which the men's constitutions had sustained. Many months elapsed before they were fit to be removed from the convalescent gangs.

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A few words will dispose of the question of the contagious power of the fever—a characteristic which of itself removes this epidemic from being classed with ordinary malarious fevers. At the commencement of the outburst, I had four native doctors attached to my hospital; they were all, within three weeks, lying in the jaws of death. Of seven others sent to do duty, only three escaped. In the case of the convicts attending on the sick in hospital, the result was still more marked. During the epidemic, 326 men were entered on the books as attendants on the sick. Of these, 221 caught the fever, and 56 died; that is, they were attacked in the proportion of 68·2 per cent., and 25·3 per cent. died. At one time I thought to mend matters by changing the whole gang of attendants after seven days' duty; but my first experiment proved that even during that short period, the fever-poison had permeated their systems, and only waited for sufficient time to develope itself. On the 23rd March I relieved, experimentally, 57 men from hospital duty, and sent them out into a standing camp some miles distant. They were, at the time of their removal, all apparently healthy, and they were placed at once in the most favourable circumstances for retaining their health. No one fell sick up to the 29th; but from that date up to the 9th April, no fewer than 28 out of the 57 men were sent into the main hospital with bad attacks of the fever. To give one instance more: out of 12 turnkeys employed in the the hospital wards, no fewer than 7 suffered from the fever, and 1 died.

Dr. Gray's *Description of* Contagious Fever *as it appeared in the Lahore Central Prison in* 1863-64.

Symptoms on admission.

The patient when admitted into hospital generally entertained the most gloomy apprehensions as to his condition, anxiety being evidently depicted on his countenance. When asked as to the seat of pain, he would sometimes refer to his loins, limbs and head; but more frequently he would state that his internal organs, liver, kidneys, &c., were rotten or burnt up. With regard to the existence of premonitory symptoms, some admitted that they had felt more or less ill in the barracks for two or three days, and that at a stated time, a distinct shivering fit had occurred; others, however, affirmed that only a few hours ago they had become suddenly warm and feverish, their head giddy, &c., but that no premonitory symptoms or shivering had been experienced.

Premonitory symptoms.

Physiognomy.

The countenance presenting an anxious, but usually not a dull or stupid expression, was in many cases covered with a more or less general flush; the conjunctivæ, as a rule, were not greatly if at all congested, but the very generally jaundiced tinge was most observable; this tinge in a very great number of instances became developed into a deep yellow hue; the tongue deeply yellow—or white—furred, and very often even on admission had already dried at the tip; if it had not, in bad cases a triangular piece at the tip soon became dry and brown, the process extending backwards at first along the centre. Instead of the furred tongue, there were not a few instances in which it became dry, glazed, and shining; there was usually very intense heat of skin, which was also dry. I very carefully looked for a rash, but none was even discovered to exist. The pulse was usually at first full and frequent 100—120; it soon became weak and compressible, retaining its frequency. Thirst was a most constant symptom.

Tongue.

Skin.

Thirst.

Respiratory movements.

The respiratory movements were generally quickened in proportion to the state of the pulse.

State of nervous and muscular systems.

There was usually from the first very great muscular and nervous depression; the patient was quite conscious, but did not wish to be disturbed; often there was frontal headache or vertigo, the prisoner stating that on attempting to lift his head, it appeared to whirl round; the tongue was frequently protruded in a series of tremulous jerks, and the arm when raised trembled like an aspen leaf. In very few cases was there impairment of the mental faculties, at least till towards the termination of the disease.

Vomiting.

Gurgling on pressure over the epigastrum.

Vomiting was not unfrequent; in some instances it was severe, but as a rule it was not persistent; when it did occur, it was at the commencement of the disease. There was often more or less gurgling on pressure over the epigastrum; pain was also generally felt there on pressure, though not complained of before.

Enlargement of liver and spleen.

State of bowels.

Enlargement of the liver and spleen was most frequent; the bowels were usually constipated, but great care had to be taken in the medicine used as aperient,—diarrhœa being most liable to supervene.

State of urine.

The urine was scanty and high coloured, the patient supposing that it was mixed with blood.

The above is a general outline of the symptoms as observed on the patient's admission. They did not of course all present themselves in each case; and when present, they varied considerably in severity, but there were numerous admissions which in every particular corresponded with the account given.

Progress of cases that proved fatal from 4th to 7th day.

The majority of the fatal cases that did not succumb from some sequelæ were protracted till the 4th, 5th, 6th or 7th day. In these the severity of the symptoms deseribed beeame aggravated, the tongue from being white—or yellow—furred became dry and brown: sometimes quite blaek and deeply eraeked; the pungent heat of skin remained; the pulse soon lost its fulness, becoming weak and thready; prostration inereased; sordes eolleeted about the teeth and lips; the patient would in all probability become torpid, but retain his senses till within a few hours of death, when the torpor sometimes passed into a state of coma, under whieh he would sink.

State of coma or insensibilty short, when it occurred.

It is worthy of remark that the last mentioned stage, viz., that of eoma or insensibility, when it did exist, was not as a rule protracted. Often did I examine, and receive rational answers, from a patient in the evening, who, I was informed on my visit to the hospital next morning, had beeome insensible during the night and died.

Cases that proved rapidly fatal.

Not a few died under one, two or three days after admission into hospital. These were the eases that exhibited the greatest sense of weight and oppression, and my opinion is that the virulenee and strength of the fever-poison paralysed the ganglionie system of nerves, thus stopping the aetion of the secretory and exeretory organs and bringing on death by eollapse. The proportion of sueh rapidly fatal cases was less after I took over charge than it was in the two or three previous months.

Progress of cases that did not prove fatal within 7 or 8 days after admission.

In eases that did not prove fatal in either of the above ways, the original symptoms remained unabated for a period varying from 5 to 9 days (the average being 6 or 7). During the twenty-four hours, and from day to day, there was no distinet remission in the febrile symptoms. After the seeond or third day the tongue usually beeame dry, and in many instances brownish; the pulse smaller and weaker; the patient, perfectly sensible, complained of distressing thirst, and the pains in his bones and joints; at the end of the above mentioned period (5 to 9 days), there was a sudden eessation of the febrile symptoms, the erisis being in a good many instanees ushered in by profuse perspiration, but much more frequently by a diseharge of copious watery stools. The pulse became slow, tongue moist, the skin lost its pungent heat and great dryness. With the exeeption of a general feeling of weakness and pains in the limbs, joints or muscles, the patient now expressed himself well, and if his appetite had gone—which was not invariably the ease—it returned, and he was clamourous for food. In this state of apparent convaleseence he would remain for several days (from four to eight or nine), when all the original symptoms presented themselves and eontinued sometimes for about the same number of days as the original attaek, but generally the period of duration was shorter. The adynamie tendencies before deseribed were observable in the relapse, and many suceumbed to it.

Continuance or symptoms for 5 to 9 days.

Cessation of symptoms. Crisis.

Apparent convalescence.

Relapse.

Adynamic tendencies manifested during the relapse.

Second, third, and fourth relapses.

In not a few instances a second interval of complete quiescenee was followed by a second relapse; and a third or even fourth reeurrenee of the sequence was not unknown.

Relapses noted by the prisoners.

The occurrenee of relapses was universally noted by the prisoners themselves, who divided their illness into periods which they denominated as their first, second, &e., attaek.

Dr. Penny's account of relapse.

Dr. Penny, in his sanatory report, points out the same eireumstanee relative to relapses. He says "in the eases of reeovery almost without exeeption was there a relapse. It beeame the rule for a second attaek to oeeur, and it was exeeedingly common for the native doetor to report that it was the third or even fourth time of recurrenee."

At first I administered quinine largely with the hope of being able to ward off the relapse, but it had no apparent effect, the relapse occurred seemingly with as great regularity as if the specific had not been exhibited.

Relapse not warded off by quinine.

The absence therefore of remissions in the fever, the definite course it pursued, the occurrence of distinct critical periods, followed by a disappearance of the febrile symptoms, all tended to produce the conviction in my mind that the fever, however it may have orginated, was now (in February) of a continued type, and attributable not to a malarious but an animal poison.

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Bronchitis and pneumonia were two of the most common complications of the disease in January, February, and beginning of March. During that time the cold was very great, the thermometer in the morning at sunrise often standing at, or even below, the freezing point. By the middle of March, however, lung complication began to decrease, and during the month of April it seldom occurred, and when present, whether as bronchitis or pneumonia, it was not severe in character. In fact, lung complication was in proportion to, and no doubt in a great measure caused by the cold, and was itself one of the chief causes of the great mortality. The indications of the stethescope, and the copious mucous or muco-purulent expectoration could not fail to detect the presence of bronchitis; but the approach of pneumonia was often most insidious. In very few instances did it occasion sufficient discomfort to the patient to induce him to draw attention to the chest; a slight cough, but very frequently unattended by the pathognomonic rusty expectoration, might be the only indication that anything was amiss. Laryngitis existed in not a few cases, and usually with it co-existed bronchitis or pneumonia.

Complications and sequelæ.

Lung complication.

Bronchitis and pneumonis.

Enlargement of liver and spleen was exceedingly common, and the occurrence of jaundice has already been pointed out as frequently accompanying the former. Even a deep jaundiced tinge, however, was not found to be a fatal symptom. Recoveries were by no means uncommon in cases in which the whole tissues were apparently thoroughly infiltrated with bilious matter.

Enlargement of liver and spleen.

Jaundice.

In a good many cases hiccup was a most distressing symptom. When it appeared, there was almost always enlargement of the liver, the hiccup being no doubt generally the result of reflex action induced by the morbid condition of that organ. This symptom, however, even when severe and persistent, was not by any means indicative of a fatal termination; cases did well after they had suffered from it almost continuously for three or four days.

Hiccup.

Jaundice.

Epistaxis was the most common form of haemorrhage, occurring generally soon after the commencement of the disease, and in some cases it was profuse and controlled with difficulty. Haemorrhage, properly so called, from the bowels, was uncommon. I have noted only one instance of its occurrence from the lungs, but in that case there was the clearest evidence of the existence of phthisis.

Haemorrhages.
Epistaxis.

When death took place at an early period of the disease, in the majority of instances its immediate cause was lung complication. Those who succumbed at a later stage were almost invariably cut off by diarrhœa or dysentery. As stated before, the first attack of fever very frequently terminated in a critical discharge from the bowels; the looseness might continue for two or three days only, or throughout the whole interval up to the period of relapse, when it generally stopped and the second febrile attack came on. Then the relapse would be replaced or succeeded by the bowel complication which would most persistently stick to the patient, who became reduced in strength from day to day, till at last he sank of exhaustion, a miserable, dried-up, and most emaciated object. When the bowel complaint assumed the form of diarrhœa, the stools were generally copious, watery, dark or greenish in color, and offensive to the smell. If dysentery was the form of complication, a considerable amount of blood

Diarrhœa and Dysentery.

Character of stools in Diarrhœa and Dysentery.

was at first passed; but the quantity generally decreased, and there were small but frequent mucoid discharges, only slightly tinged with blood.

Ophthalmia.

Ophthalmia was not a frequent complication or sequelæ in the Central Jail; but in the Lahore Female Penitentiary, where the same form of fever broke out in the month of March, there were very few of the women attacked with fever, who towards its termination, or during the period of convalescence, did not suffer from ophthalmia. That it was dependent on the fever was evident from the fact that those who had not the fever experienced also an immunity from the ophthalmia.

Glandular inflammation and suppuration.

Glandular inflammation and suppuration occurred in a good many instances. The parotid and submaxillary glands sometimes swelled enormously; pus formed and kept discharging for a considerable period. Pharyngeal abscesses also were noted in a few cases.

Partial paralysis.

Only two cases have come under my observation in which the fever was followed by partial paralysis: in one there is paralysis of the *postio-dura* on one side; the other is the case of a boy who made a most tedious recovery, and in whom the right leg has suffered partial wasting, with diminished power of sensation and motion.

Tedious convalescence. Severe arthritic pains.

The very tedious convalescence and persistence of severe arthritic pains, unaccompanied by effusion into the joints, were well marked features of the disease. A good many patients remained in hospital for months after the fever left, suffering from nothing but these pains and general debility.

Anatomical lesions. Of pleuræ.

During the colder months lesions of the lungss and their coverings were almost constantly met with. The pleuritic adhesions were sometimes slight and easily broken up, being evidently of very recent formation, but in not a few instances they were strong and tough, and the pleuræ could be separated only on the application of a considerable amount of force. In only one instance did I find a collection of fluid in the pleural cavity.

Of the lung substance.

The substance of the lungs presented every appearance from simple congestion up to the stage of grey hepatization. In a few cases small tubercular deposits or abscesses were found. As the weather became warmer, the lesion of the lungs became less marked and common.

Of liver.

Enlargement of the liver was a most common appearance up to the very end of the epidemic. The change of weather from a colder to a milder temperature did not seem to influence the state of this organ as it did the lungs. There seemed generally to be simply intense engorgement without structural degeneration. In a few cases there was great friability, the finger entering its substance on pressure as it would a piece of dough.

Of spleen.

Simple enlargement of the spleen was also very commonly found on dissection; but it was less frequent, and had generally proceeded proportionately to a less extent than had the enlargement of the liver.

Ulceration of large intestines.

Ulceration of the large intestines was very often met with. Numerous little ulcers with distinct outlines were observed in the position of the solitary glands.

The history of such cases showed that during life dysentery had occurred as a complication, or sequelæ of the fever. A certain amount of thickening and submucous deposit was also not unfrequently observed in the large intestines.

Ulceration not found in small intestines.

Peyers patches never show evidences of ulceration.

In no instance was there found ulceration of the small intestines. Careful examination of Peyer's patches was made in numerous dissections, with the view of determining the point as to whether they presented evidences of ulceration; but in every case examined, the result was the same, no ulceration existed, the mucous membrane of both the large and

small intestines was not unfrequently found congested, as might have been anticipated from the pre-existent diarrhœa and dysentery.

Other post mortem appearances.

Heart.
Kidneys.
Brain.

The only other appearances noted were in numerous cases infiltration of the tissues with bilious matter. A small pale and flabby condition of the heart, frequent congestion of the kidneys, the existence in the lateral ventricles of the brain of an abnormal amount of serosity, and in one instance congestion of the veins of the pia mater. I regret that, till towards the termination of the epidemic, I had not the means of ascertaining the state of the contents of the cranium.

* * * * * * * *

Was the fever infectious or contagious.

The proofs of the contagious or infectious character of the disease, which I shall now detail, were to me quite convincing. The determination of such a point is never unattended by difficulty, and the difficulty was not diminished in my case by the circumstance that the fever when I took over charge had been raging for four or five months in the Jail.

Proofs of contagion from Jail establishment.

Out of the forty-one warders who superintend and guard the prisoners while laboring in the workshops during the day time, and who have to perform all the duties connected with the management of the prisoners within the Jail walls, not more than two or three escaped having fever; sixteen of them had it severely and two died. One of the fatal cases came under my own observation, and exhibited the severe symptoms of which I have previously given an outline. The *burkundauzes* who had charge of the prisoners at work in the garden, and on the erection of new buildings outside the Jail suffered, but to a much less degree.

Hospital establishment.

The hospital establishment, consisting of three native doctors, a compounder and dresser, all suffered from the fever. The head native doctor "Shaik Chaidee" had a very severe attack.

With regard to the attendants on the sick, I was informed when I joined that every one of the prisoners then acting in that capacity had suffered from the fever. They might therefore supposed to be well seasoned. I had, however, occasion to bring several prisoners into hospital as special attendants; and the fact that they were almost invariably attacked by the fever in an aggravated form, was one of the first circumstances that led me to believe that the disease was of a contagious character.

There was another circumstance that I observed relative to the admissions into hospital which tended to convince me of the communicability of the disease; it was this, that in several instances prisoners admitted into hospital labouring under some other disease were also attacked by the prevailing fever, and generally suffered severely. It was also noteworthy, as stated before, that a large number of the prisoners recently received into the jail suffered from the fever.

Other proofs of the communicability of the fever.

Lahore Female Penitentiary and Lunatic Asylum.

Other proofs of the infectious nature of the disease have either come under my own observation or been brought to my notice. The same sort of fever broke out in March and April in the Lahore Female Penitentiary and Lunatic Asylum; and its communicability was in both places recognized by the Civil Surgeon, Dr. Smith. In both institutions did the native doctors suffer from a severe attack of the fever. The fever, as it occurred in the Lahore Female Penitentiary, came under my observation, and I shall refer to it more fully afterwards.

In connection with a gang of transportation prisoners sent to Mooltan from the Lahore Central Jail.

A gang of transportation prisoners was forwarded from this jail to Mooltan in December. Soon after its arrival there, a fever, evidently of the same type as was raging in the Lahore Central Jail, broke out in the Mooltan Jail, and its origin was attributed to infection caught from the Lahore prisoners.

(part of 21.h.17(k))

ANNUAL RETURNS

OF THE

EUROPEAN AND NATIVE ARMIES,

AND OF THE

JAIL POPULATION OF THE BENGAL PRESIDENCY,

FOR THE YEAR 1865.

COMPILED AND SYSTEMATICALLY ARRANGED FROM THE ORIGINAL DOCUMENTS BY

JAMES L. BRYDEN, M.D.,

ASST. SURGEON, BENGAL MEDICAL SERVICE;

IN CHARGE OF THE STATISTICAL BRANCH OFFICE OF THE PRINCIPAL INSPECTOR GENERAL, BENGAL MEDICAL DEPARTMENT.

1865.

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I. EUROPEAN TROOPS, 1865.

EUROPEAN TROOPS, 1865.

I.

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the BENGAL PRESIDENCY during the year 1865, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Deaths in Hospital.																			Died out of Hospital.
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Spleen Disease.	Respiratory Diseases.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	
January ...	40,516	1969	4·86	54	...	4	3	1	2	2	...	1	2	2	4	4	3	...	4	5	7	...	...	1	...	6	3
February ...	37,990	1906	5·02	35	...	1	4	1	1	1	...	...	...	...	...	4	3	...	4	2	1	...	...	...	...	9	4
March ...	36,935	2028	5·49	38	...	3	3	1	1	2	...	1	5	2	2	1	...	1	3	...	3	...	...	2	...	4	4
April ...	36,852	2097	5·69	72	...	23	3	2	3	7	1	...	6	1	1	4	6	...	2	1	2	...	...	1	2	5	2
May ...	37,048	2398	6·47	88	...	14	1	...	10	13	10	1	6	1	3	8	4	1	3	2	2	...	...	2	1	3	3
June ...	36,897	2619	7·09	127	...	4	...	3	4	6	55	3	6	1	...	5	3	...	3	11	7	...	...	1	2	5	8
July ...	36,766	2719	7·39	106	...	8	...	4	8	5	38	4	6	2	2	6	5	...	3	2	3	1	...	...	...	6	3
August ...	36,598	2559	6·99	115	...	42	...	3	4	3	4	1	10	4	6	6	9	1	4	3	4	...	...	...	...	8	3
September..	36,548	2487	6·80	76	...	11	...	2	9	8	1	...	7	3	1	5	1	...	2	4	11	1	1	...	...	8	1
October ...	36,463	2421	6·64	68	...	2	...	6	6	3	1	1	5	4	4	6	9	...	1	2	5	...	...	2	1	6	4
November..	37,701	2034	5·40	70	...	2	1	3	5	3	...	1	4	3	1	12	10	...	2	4	2	1	...	2	1	9	4
December...	36,203	1660	4·58	53	...	2	...	1	2	3	1	...	3	...	...	9	7	...	4	2	4	...	1	1	2	5	6
						116	15	27	55	56	111	13	60	23	24	70	60	3	35	38	51	3	2	12	9	74	45
						Died per 1000 of the Average Strength.																					
For the year	37,210	2241	6·02	902	24·24	3·12	·40	3·71			2·98	·35	2·23		·64	3·49		·08	·97	1·02	1·38	·08	·05	·30	·24	1·99	1·21

DISEASES.	Number of Admissions into Hospital in each Month.												Total Admissions during the Year.	Admitted per cent. of Strength.	Died per cent. of Admissions.
	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	5	1	4	28	21	4	10	64	14	2	2	5	160	·43	72·50
Small-pox ...	35	23	17	18	9	1	...	...	...	...	3	2	108	·29	14·28
Fever, Intermittent ...	837	404	507	765	1,400	1,550	1,573	1,620	1,195	1,779	1,198	894	13,722	36·88	·70
,, Remittent ...	42	43	50	163	209	177	369	324	209	231	83	47	1,947	5·23	
,, Continued ...	110	76	149	281	462	711	753	460	350	384	165	97	3,998	10·74	
Apoplexy ...	1	1	4	4	21	95	64	17	...	3	...	1	211	·57	52·36
Delirium Tremens ...	9	4	9	12	8	17	8	15	17	14	10	13	136	·36	9·56
Dysentery, Acute ...	104	42	82	117	152	129	125	178	185	171	142	100	1,527	4·10	5·42
,, Chronic ...															
Diarrhœa ...	159	146	226	371	370	271	384	646	389	313	228	195	3,698	9·94	·65
Hepatitis, Acute ...	160	137	157	175	231	240	235	266	230	210	141	143	2,325	6·25	5·59
,, Chronic ...															
Spleen Disease ...	13	15	15	18	25	27	23	33	27	19	9	20	250	·67	1·20
Respiratory Diseases ...	329	226	264	202	244	245	216	258	203	247	221	213	2,868	7·71	1·25
Phthisis Pulmonalis ...	15	12	17	16	18	22	20	39	28	33	17	22	259	·70	19·69
Scurvy ...	...	2	1	5	2	3	4	4	2	8	6	1	38	·10	5·26
Rheumatism ...	292	300	280	237	320	247	288	299	237	266	222	208	3,196	8·59	
Venereal Diseases ...	1,067	824	819	840	847	619	503	575	531	665	585	579	8,454	22·72	
Eye Diseases ...	107	97	94	134	153	95	73	88	69	126	106	61	1,203	3·23	
Abscess and Ulcer ...	358	305	304	350	478	449	500	450	303	341	311	280	4,429	11·90	·43
Wounds and Accidents ...	377	307	339	343	373	261	216	267	249	360	324	356	3,772	10·14	
All other Causes ...	515	430	502	650	770	771	776	871	672	660	408	409	7,434	19·98	
	4,541	3,395	3,840	4,729	6,113	5,934	6,140	6,474	4,910	5,832	4,181	3,646	59,735		
	Admitted per cent. of the Average Strength in each Month.														
	11·21	8·94	10·39	12·83	16·50	16·09	16·70	17·69	13·44	16·00	11·09	10·07	160·53		

Sixteen names appear in the Death Rolls of Regiments of men who are not included in this Return, and which have not appeared in the current Record of Mortality. The deaths of men detached on Staff employment, of small bodies of Invalids which have furnished no returns, and of a few men who have been left behind unable to proceed with their Regiments on the march, are comprehended in this total. These sixteen deaths make an addition to the mortality of the year of ·43 per 1000.

EUROPEAN TROOPS, 1865.

II.

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in BENGAL PROPER during the year 1865, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per Cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Deaths in Hospital.																				Died out of Hospital.
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Spleen Disease.	Respiratory Disease.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	
January ...	1,977	99	5·01	2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
February ...	1,741	113	6·49	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
March ...	2,124	112	5·28	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
April ...	2,118	148	6·99	8	...	1	...	...	1	...	1	...	1	...	1	1	...	...	1	...	...	...	1	...	...	...
May ...	2,054	188	9·15	18	...	10	...	...	3	1	...	...	...	1	2	...	...	...	...	1	1	...	...	...	...	...
June ...	2,031	210	10·34	5	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
July ...	2,047	188	9·18	3	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...
August ...	2,073	172	8·30	5	...	...	...	1	2	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...
September..	2,039	191	9·37	6	...	...	..	...	2	...	...	...	...	1	1	...	...	...	1	...	1	...	...	...	...	...
October ...	1,889	195	10·32	8	...	1	...	...	1	...	1	...	...	2	...	...	2	...	...	...	...	...	...	...	...	1
November..	2,452	183	7·46	9	...	...	...	...	1	1	...	...	1	2	...	...	1	...	...	...	...	...	...	...	...	3
December...	1,792	117	6·53	3	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1
						13	...	1	12	2	6	...	3	7	6	1	4	...	2	1	3	...	...	1	...	1	5
						Died per 1000 of the Average Strength.																					
For the year	2,023	160	7·89	68	33·53	6·41	...	·49	5·92	·99	2·96	...	1·48	3·45	2·96	·49	1·97	...	·99	·49	1·48	...	...	·49	...	·49	2·47

DISEASES.	Number of Admissions into Hospital in each Month.												Total Admissions during the Year.	Admitted per cent. of Strength.	Died per cent. of Admissions.
	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	...	...	...	1	12	...	...	...	...	1	...	1	15	·74	66·67
Small-pox ...	2	...	...	...	...	...	...	...	...	...	...	...	2	·10	...
Fever, Intermittent ...	14	13	21	41	76	77	75	70	72	73	73	51	656	32·35	1·20
,, Remittent ...	1	2	...	51	38	7	2	12	13	10	11	18	165	8·13	
,, Continued ...	13	2	8	16	93	167	31	21	17	25	31	9	433	21·35	
Apoplexy ...	...	...	...	2	...	9	...	1	...	2	...	1	15	·74	40·00
Delirium Tremens ...	...	1	...	1	...	...	...	1	2	1	1	6	13	·64	...
Dysentery, Acute ...	4	4	8	35	22	17	12	30	19	19	13	10	193	9·52	5·18
,, Chronic ...															
Diarrhœa ...	22	20	25	59	55	28	34	36	23	27	53	25	407	20·07	1·47
Hepatitis, Acute ...	9	16	2	5	3	3	9	8	9	6	9	3	82	4·04	6·10
,, Chronic ...															
Spleen Disease ...	1	2	...	...	1	...	2	3	1	1	...	...	11	·54	...
Respiratory Diseases ...	13	16	16	7	6	8	38	25	13	14	9	17	182	8·97	1·10
Phthisis Pulmonalis ...	2	...	...	2	...	...	2	4	2	2	2	2	18	·89	16·67
Scurvy ...	...	...	...	...	...	...	...	...	...	...	...	...	.....	.....	
Rheumatism ...	25	29	15	14	20	22	30	27	15	12	13	13	235	11·59	
Venereal Diseases ...	80	53	46	54	45	36	21	48	48	41	41	27	540	26·63	
Eye Diseases ...	4	5	2	7	10	4	4	4	4	1	9	2	56	2·76	·15
Abscess and Ulcer ...	19	19	11	23	19	28	31	20	12	22	38	9	251	12·38	
Wounds and Accidents ...	34	11	9	29	12	19	15	22	20	27	24	26	248	12·23	
All other Causes ...	26	39	30	39	44	83	85	86	74	58	37	31	632	31·16	
	269	232	193	386	456	508	391	418	344	342	364	251	4,154		
	Admitted per cent. of the Average Strength in each Month.														
	13·61	13·32	9·09	18·22	22·20	25·01	19·10	20·16	16·87	18·10	14·84	14·01	204·83		

This Statement does not include the Artillery attached to the Bhootan Field Force.

EUROPEAN TROOPS, 1865.

III.

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the DINAPORE, BENARES, OUDE, and CAWNPORE DISTRICTS during the year 1865, *and the prevalence of the principal Diseases in each Month of the Year.*

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Deaths in Hospital.																				Died out of Hospital.
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa	Hepatitis, Acute.	Hepatitis, Chronic.	Spleen Disease.	Respiratory Disease.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other causes.	
January ...	9,494	432	4·55	18	...	3	1	...	2	...	...	...	1	...	1	1	1	...	2	1	1	...	...	...	...	2	2
February ...	10,009	468	4·68	6	...	...	1	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	2
March ...	9,894	539	5·45	14	...	...	...	...	1	2	...	...	3	...	...	...	...	1	1	...	...	...	...	1	...	1	4
April ...	10,281	592	5·76	36	...	22	...	1	...	6	...	...	3	1	...	1	1	...	...	...	...	...	...	...	1	...	...
May ...	10,300	622	6·04	28	...	3	...	...	2	7	6	...	1	...	...	3	...	...	1	1	...	...	...	1	1	1	1
June ...	10,176	742	7·29	57	...	3	...	2	1	1	35	2	1	...	...	2	...	...	1	4	1	...	...	...	...	...	4
July ...	10,136	671	6·62	20	...	...	...	2	...	2	3	2	4	...	...	2	...	...	1	2	1	...	...	...	...	...	1
August ...	10,104	700	6·93	41	...	15	...	...	1	1	1	...	5	1	3	4	2	...	1	1	3	...	...	...	...	3	...
September	10,069	717	7·12	27	...	8	...	1	3	4	...	...	3	1	...	...	1	...	1	...	4	...	1	...	...	...	...
October ...	10,034	711	7·09	16	...	...	...	2	1	1	...	...	1	1	2	3	1	...	...	1	1	...	...	1	...	...	1
November	9,278	550	5·93	17	...	1	...	2	1	1	...	...	1	...	1	4	...	...	1	1	...	...	...	1	...	3	...
December...	9,231	423	4·58	9	...	...	...	...	...	1	...	...	...	...	...	2	1	...	...	1	...	...	...	...	...	1	3
						55	2	10	13	26	45	4	23	4	7	23	7	1	9	12	11	...	1	4	2	12	18
						Died per 1000 of the Average Strength.																					
For the year	9,917	597	6·02	289	29·14	5·55	·20	1·01	1·31	2·62	4·54	·40	2·32	·40	·71	2·32	·71	·10	·91	1·21	1·11	...	·10	·40	·20	1·21	1·81

DISEASES.	Number of Admissions into Hospital in each Month.												Total Admissions during the Year.	Admitted per cent. of Strength.	Died per cent. of Admissions.
	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	4	.....	.....	27	2	3	.....	19	10	.....	1	2	68	·68	80·88
Small-pox ...	7	3	7	4	2	1	.....	...	...	.....	...	.....	24	·24	8·33
Fever, Intermittent ...	102	64	84	185	228	470	275	399	311	326	179	136	2,759	27·82	
,, Remittent ...	12	15	5	32	56	46	17	36	36	45	13	14	327	3·30	1·11
,, Continued ...	30	38	83	119	190	292	140	130	92	151	49	20	1,334	13·45	
Apoplexy ...	.....	.....	.....	1	12	52	4	2	...	.....	...	.....	71	·72	63·38
Delirium Tremens ...	1	.....	2	4	.....	5	3	2	2	4	2	5	30	·30	13·33
Dysentery, Acute } ...	28	9	20	33	48	39	42	57	56	55	37	18	442	4·45	6·11
,, Chronic }															
Diarrhœa ...	41	49	79	131	89	64	69	184	106	68	27	40	947	9·55	·74
Hepatitis, Acute } ...	44	19	38	50	50	58	59	75	62	61	31	43	590	5·95	5·08
,, Chronic }															
Spleen Disease ...	2	1	6	3	5	3	3	4	3	3	3	1	37	·37	2·70
Respiratory Diseases ...	74	42	56	70	57	38	29	53	53	63	53	31	619	6·24	1·45
Phthisis Pulmonalis ...	4	4	7	7	3	5	3	6	11	9	...	3	62	·63	17·74
Scurvy ...	.....	.....	1	.....	.....	.....	.....	2	1	1	3	.....	8	·08	
Rheumatism ...	64	66	50	62	85	57	67	73	69	65	61	52	771	7·77	
Venereal Diseases ...	272	226	247	234	313	215	172	241	191	268	216	194	2,789	28·13	
Eye Diseases ...	22	17	21	35	36	21	18	36	25	26	33	12	302	3·05	·43
Abscess and Ulcer ...	81	73	83	78	109	103	117	104	80	105	63	45	1,041	10·50	
Wounds and Accidents ...	61	94	77	69	75	46	52	65	52	73	51	90	805	8·12	
All other Causes ...	120	95	100	118	165	159	141	184	119	167	90	97	1,555	15·68	
	969	815	966	1,262	1,525	1,677	1,211	1,672	1,279	1,490	912	803	14,581		
	Admitted per cent. of the Average Strength in each Month.														
	10·21	8·14	9·76	12·28	14·81	16·48	11·95	16·55	12·70	14·85	9·83	8·70	147·03		

EUROPEAN TROOPS, 1865.

IV.

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the MEERUT and ROHILCUND DISTRICTS during the year 1865, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Deaths in Hospital.																				Died out of Hospital.
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Spleen Disease.	Respiratory Disease.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	
January ...	5,116	287	5·61	9	...	...	1	1	...	...	...	...	...	1	...	1	...	...	...	2	1	...	...	...	...	2	...
February ...	5,242	302	5·76	4	..	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
March ...	5,034	294	5·84	4	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
April ...	5,043	301	5·97	9	...	...	2	1	...	...	...	...	2	...	...	1	1	...	...	...	...	...	...	...	...	1	1
May ...	5,223	367	7·16	5	...	...	...	...	...	3	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...
June ...	5,249	375	7·28	13	...	...	...	...	2	...	4	1	...	...	...	1	...	...	1	2	1	...	...	...	...	...	1
July ...	5,237	473	14·61	20	...	...	...	1	2	3	13	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
August ...	5,217	436	8·35	8	...	...	...	...	...	1	1	...	...	...	1	...	2	...	...	...	...	...	...	...	...	2	1
September..	5,208	401	7·70	11	...	2	...	...	...	1	...	...	2	1	...	...	...	...	...	1	2	...	...	...	...	2	...
October ...	5,180	359	6·93	7	...	1	...	...	...	...	...	...	2	...	...	1	3	...	...	...	...	...	...	...	...	...	...
November ..	4,895	278	5·68	5	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	3	..
December...	4,818	214	4·44	6	...	...	...	...	...	1	1	...	...	...	...	...	1	...	...	1	1	...	...	1	...	...	..
						4	9	3	4	9	19	1	6	2	1	5	8	1	1	6	5	...	...	...	1	13	3
						Died per 1000 of the Average Strength.																					
For the year	5,122	341	6·66	101	19·72	·78	1·76	·59	·78	1·76	3·71	·19	1·17	·39	·19	·98	1·57	·19	·19	1·17	·98	...	...	...	·19	2·54	·59

DISEASES.	Number of Admissions into Hospital in each Month.												Total Admissions during the Year.	Admitted per cent. of Strength.	Died per cent. of Admissions.
	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	...	...	...	.....	1	...	.....	...	3	1	1	...	6	·12	66·67
Small-pox ...	6	8	6	8	3	...	.....	...	.....	...	.....	1	32	·62	28·12
Fever, Intermittent ...	66	21	33	29	40	67	114	57	59	71	36	14	607	11·85	·80
,, Remittent ...	11	7	9	22	20	21	157	112	23	19	12	4	422	8·24	
,, Continued ...	16	18	20	52	62	82	384	134	99	44	30	20	961	18·76	
Apoplexy ...	...	...	1	...	...	7	14	4	.....	...	.....	...	26	·51	73·08
Delirium Tremens ...	1	...	...	...	1	4	1	2	4	3	.....	...	16	·31	6·25
Dysentery, Acute ...	11	3	7	15	20	20	11	16	24	38	19	15	199	3·89	4·02
,, Chronic ...															
Diarrhœa ...	9	5	21	35	38	26	24	32	42	57	32	22	343	6·70	·29
Hepatitis, Acute ...	17	12	26	27	36	40	36	48	33	47	20	27	369	7·20	3·52
,, Chronic ...															
Spleen Disease ...	4	4	1	3	6	4	3	5	5	2	1	5	43	·84	2·33
Respiratory Diseases ...	38	23	27	26	40	34	36	50	29	28	31	33	395	7·71	·25
Phthisis Pulmonalis ...	1	2	1	2	4	9	4	8	5	9	2	...	47	·92	10·64
Scurvy ...	...	...	...	...	...	2	.....	1	.....	1	.....	...	4	·08	
Rheumatism ...	38	42	42	37	49	32	35	56	36	25	39	34	465	9·08	
Venereal Diseases ...	164	135	93	164	136	111	100	92	82	103	75	72	1,327	25·91	
Eye Diseases ...	11	13	14	17	28	15	8	12	10	22	8	4	162	3·16	·46
Abscess and Ulcer ...	63	53	44	62	75	64	91	78	52	56	45		720	14·23	
Wounds and Accidents ...	40	28	48	32	61	51	26	37	34	56	41	44	498	9·72	
All other Causes ...	55	54	84	102	139	131	126	154	107	101	51	52	1,156	22·57	
	551	428	477	633	759	720	1,170	898	652	683	443	393	7,807		
	Admitted per cent. of the Average Strength in each Month.														
	10·77	8·17	9·48	12·55	14·53	13·72	22·34	17·21	12·52	13·19	9·05	8·16	152·42		

EUROPEAN TROOPS, 1865.

V.

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the AGRA DISTRICT and in CENTRAL INDIA during the year 1865, *and the prevalence of the principal Diseases in each Month of the Year.*

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Deaths in Hospital.																				Died out of Hospital.
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Spleen Disease.	Respiratory Disease.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	
January ...	4,787	260	5·43	4	...	...	...	...	...	...	..	...	...	...	...	1	...	...	...	1	...	...	...	...	...	1	1
February ...	4,683	289	6·17	3	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	...	...
March ...	4,697	296	6·30	3	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...
April ...	4,841	299	6·18	8	...	...	...	...	1	...	...	...	...	...	...	...	2	...	...	1	1	...	...	...	...	2	1
May ...	4,807	309	6·43	10	...	...	...	...	...	1	2	...	...	...	...	3	1	...	1	...	...	...	...	...	...	1	1
June ...	4,824	306	6·34	10	...	...	...	...	...	1	5	...	1	...	...	1	...	...	...	...	1	...	1	...	...	...	...
July ...	4,825	309	6·40	11	...	6	...	...	...	...	2	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
August ...	4,789	304	6·35	36	...	27	...	...	...	1	...	1	1	...	2	1	1	1	...	...	...	...	...	...	...	...	1
September..	4,775	362	7·58	11	...	1	...	1	2	2	1	...	1	...	...	1	...	...	...	1	1	...	...	...	...	...	...
October ...	4,718	396	8·39	12	...	...	...	1	1	1	...	1	...	...	2	2	1	...	...	...	...	...	...	1	...	2	...
November..	4,024	274	6·81	12	...	...	...	1	2	...	...	...	1	...	...	6	1	...	...	1	...	1	...	...	...	...	...
December..	4,494	223	4·96	6	...	...	...	...	...	...	...	...	1	...	...	2	2	...	1	...	...	...	...	...	...	...	...
						34	...	3	6	6	10	5	5	...	4	18	8	1	2	6	4	1	...	3	...	6	4
						Died per 1000 of the Average Strength.																					
For the year	4,689	302	6·44	126	26·87	7·25	...	·64	1·28	1·28	2·13	1·07	1·07	...	·85	3·84	1·71	·21	·43	1·28	·85	·21	...	·64	...	1·28	·85

DISEASES.	Number of Admissions into Hospital in each Month.												Total Admissions during the Year.	Admitted per cent. of Strength.	Died per cent. of Admissions.
	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	.....	.....	.....	.....	.....	.....	8	44	1	.....	.....	.....	53	1·13	64·15
Small-pox ...	3	6	4	1	1	.....	.....	.....	.....	.....	.....	.....	15	·32	.....
Fever, Intermittent ...	131	80	87	78	147	157	180	202	368	625	303	146	2,504	53·40	
,, Remittent ...	10	7	15	27	35	38	39	55	101	63	16	5	411	8·77	·45
,, Coutinued ...	21	10	14	37	37	41	28	39	61	93	11	12	404	8·62	
Apoplexy ...	.....	.....	.....	1	6	8	3	2	.....	.....	.....	.....	20	·43	50·00
Delirium Tremens ...	1	2	2	.....	.....	3	2	6	4	4	1	.....	25	·53	20·00
Dysentery, Acute } ...	18	10	12	13	15	5	11	34	40	16	7	13	194	4·14	2·58
,, Chronic }															
Diarrhœa ...	22	18	36	44	55	44	80	232	91	41	21	34	718	15·31	·56
Hepatitis, Acute } ...	23	17	17	9	38	25	26	38	33	32	18	15	291	6·21	8·94
,, Chronic }															
Spleen Disease ...	4	4	5	3	8	7	6	5	5	5	2	5	59	1·26	1·70
Respiratory Diseases ...	51	25	32	22	21	37	17	25	19	29	15	25	318	6·78	·31
Phthisis Pulmonalis ...	1	4	2	1	1	.....	4	.....	3	1	2	3	22	·47	18·18
Scurvy ...	.....	1	.....	1	.....	.....	.....	.....	.....	.....	1	.....	3	·06	
Rheumatism ...	38	49	48	31	40	30	38	28	35	56	23	16	432	9·21	
Venereal Diseases ...	172	129	143	119	116	81	69	64	72	75	60	62	1,162	24·78	
Eye Diseases ...	31	18	17	21	13	9	16	6	9	19	6	6	171	3·65	·40
Abscess and Ulcer ...	55	64	46	44	84	61	71	32	37	34	33	44	605	12·90	
Wounds and Accidents...	47	45	52	59	60	29	32	32	33	35	37	48	509	10·85	
All other Causes ...	68	68	79	104	137	124	117	139	120	95	49	58	1,158	24·70	
	696	557	611	615	814	699	747	983	1,032	1,223	605	492	9074		
	Admitted per cent. of the Average Strength in each Month.														
	14·54	11·89	13·01	12·70	16·93	14·49	15·48	20·53	21·61	25·92	15·04	10·95	193·52		

EUROPEAN TROOPS, 1865.

VI.

TABLE showing the SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the PUNJAB during the year 1865, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Deaths in Hospital.																				Died out of Hospital.
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery, Acute.	Dysentery, Chronic.	Diarrhœa.	Hepatitis, Acute.	Hepatitis, Chronic.	Spleen Disease.	Respiratory Disease.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	
January ...	14,602	633	4·34	8	.....	...	1	...	...	2	.....	...	.....	...	.....	1	1	...	.....	.....	3	...	...	...	...	.....	...
February ...	14,055	568	4·04	17	.....	...	...	1	...	1	.....	...	.....	...	.....	2	2	...	4	.....	...	...	...	...	...	5	2
March ...	13,861	708	5·11	8	.....	...	...	1	...	...	.....	...	1	...	.....	1	.....	...	1	.....	2	...	...	...	...	2	...
April ...	14,058	712	5·06	10	.....	...	1	...	1	1	.....	...	.....	...	.....	1	1	...	1	.....	1	...	...	...	1	2	...
May ...	14,381	854	5·94	26	.....	...	1	...	5	1	2	1	5	...	1	1	3	...	1	1	1	...	...	1	...	2	...
June ...	14,335	927	6·47	40	.....	1	...	1	...	4	7	...	4	1	.....	1	2	...	1	4	4	...	...	...	2	5	3
July ...	14,269	1056	7·40	48	.....	1	...	1	4	...	20	...	1	1	1	3	5	...	2	.....	2	1	...	...	...	4	2
August ...	14,155	927	6·55	23	.....	...	...	2	...	...	2	...	3	2	.....	1	4	...	2	2	1	...	...	...	...	3	1
September..	14,202	799	5·63	21	.....	...	...	...	2	1	.....	...	1	...	.....	4	.....	...	.....	2	3	1	...	...	...	6	1
October ...	13,723	719	5·24	21	.....	...	...	2	3	1	.....	...	2	...	.....	.....	2	...	.....	1	4	...	...	...	1	4	1
November..	13,010	561	4·31	18	.....	...	1	...	1	...	.....	...	1	1	.....	3	5	...	.....	1	...	...	...	1	1	2	1
December..	11,908	462	3·88	18	.....	...	...	1	1	...	.....	...	1	...	.....	4	1	...	3	.....	...	...	1	1	1	3	1
						2	4	9	17	11	31	1	19	5	2	22	26	...	15	11	21	2	1	3	6	38	12
						Died per 1000 of the Average Strength.																					
For the year	13,880	744	5·36	258	18·59	·14	·29	·65	1·23	·79	2·23	·07	1·37	·36	·14	1·59	1·87	...	1·08	·79	1·51	·14	·07	·22	·44	2·74	·87

DISEASES.	Number of Admissions into Hospital in each Month.												Total Admissions during the Year.	Admitted per cent. of Strength.	Died per cent. of Admissions.
	Jan.	Feb.	March.	April.	May.	June.	July.	Augt.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	...	...	...	...	2	1	1	...	...	...	...	...	4	·03	50·00
Small-pox ...	8	...	...	5	3	...	...	...	...	...	3	1	20	·14	20·00
Fever, Intermittent ...	402	184	252	422	892	770	921	880	380	668	512	444	6,727	48·47	
,, Remittent ...	7	5	6	31	43	63	154	108	25	89	26	3	560	4·03	·46
,, Continued ...	27	8	22	43	63	108	165	135	78	65	40	21	775	5·58	
Apoplexy ...	1	1	2	...	2	17	42	8	...	1	.....	...	74	·53	41·89
Delirium Tremens ...	4	1	2	7	7	5	2	3	5	2	5	1	44	·32	2·27
Dysentery, Acute ...	25	8	18	16	39	44	41	40	39	39	37	18	364	2·62	6·59
,, Chronic ...															
Diarrhœa ...	38	37	40	97	125	104	171	111	122	108	80	46	1,109	7·99	·18
Hepatitis, Acute ...	50	55	64	76	100	109	101	96	89	62	40	39	881	6·35	5·45
,, Chronic ...															
Spleen Disease ...	7	4	...	8	5	12	9	16	13	7	2	4	87	·63	...
Respiratory Diseases ...	130	102	119	77	120	127	95	104	89	104	89	76	1,232	8·88	1·22
Phthisis Pulmonalis ...	6	1	6	4	10	8	7	20	7	12	3	4	88	·63	23·86
Scurvy ...	...	1	...	4	2	1	4	1	1	6	2	1	23	·17	
Rheumatism ...	104	98	113	87	126	103	114	113	76	106	70	63	1,173	8·45	
Venereal Diseases ...	267	231	262	283	227	171	138	129	136	156	133	150	2,263	16·30	
Eye Diseases ...	31	34	30	53	66	44	27	29	29	53	41	28	456	3·28	·63
Abscess and Ulcer ...	102	71	102	140	187	186	186	216	120	107	93	91	1,601	11·54	
Wounds and Accidents ...	162	108	147	151	162	112	89	108	108	159	127	132	1,565	11·28	
All other Causes ...	171	143	180	273	274	267	302	304	249	218	100	110	2,591	18·67	
	1,542	1,092	1,365	1,757	2,455	2,252	2,569	2,451	1,557	1,962	1,493	1,232	21,637		
	Admitted per cent. of the Average Strength in each Month.														
	10·56	7·77	9·85	12·50	17·07	15·71	18·00	17·32	10·96	14·30	10·78	10·35	155·89		

EUROPEAN TROOPS, 1865.

VII.

COMPARATIVE STATEMENT of the ratios of SICKNESS and MORTALITY among the EUROPEAN TROOPS serving in the various PROVINCES of the BENGAL PRESIDENCY during the year 1865.

DISEASES.	BENGAL PROPER. Average Strength ... 2,028; Daily Sick per cent. of Strength ... ... 7·89; Admitted per cent. of Strength ... ... 204·83; Died per 1000 of Strength— A. Cholera ... 6·41; B. All Causes ... 33·53			DINAPORE, BENARES, OUDE, AND CAWNPORE. Average Strength ... 9,917; Daily Sick per cent. of Strength ... ... 6·02; Admitted per cent. of Strength ... ... 147·03; Died per 1000 of Strength— A. Cholera ... 5·55; B. All Causes ... 29·14			MEERUT AND ROHILKUND. Average Strength ... ... 5,122; Daily Sick per cent. of Strength ... ... 6·66; Admitted per cent. of Strength ... ... 152·42; Died per 1000 of Strength— A. Cholera ... ... ·78; B. All Causes ... 19·72			AGRA AND CENTRAL INDIA. Average Strength ... ... 4,689; Daily Sick per cent. of Strength ... ... 6·44; Admitted per cent. of Strength ... ... 193·52; Died per 1000 of Strength— A. Cholera ... ... 7·25; B. All Causes ... 26·87			PUNJAB. Average Strength ... ... 13,880; Daily Sick per cent. of Strength ... ... 5·36; Admitted per cent. of Strength ... ... 155·89; Died per 1000 of Strength— A. Cholera ... ... ·14; B. All Causes ... 18·59			BENGAL PRESIDENCY. Average Strength ... ... 37,210; Daily Sick per cent. of Strength... 6·02; Admitted per cent. of Strength ... 160·53; Died per 1000 of Strength— A. Cholera ... ... 3·12; B. Deaths out of Hospital ... 1·18; C. Other absent Deaths ... ·43; D. All Causes ... ... 24·67; Loss by Invaliding per 1000 ... 46·87			
	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	Died per 1000 of Average Strength	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	Died per 1000 of Average Strength.	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	Died per 1000 of Average Strength.	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	Died per 1000 of Average Strength.	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	Died per 1000 of Average Strength.	Admitted per cent. of Average Strength.	Died per cent. of Admissions.	Died per 1000 of Average Strength.	Invalided per 1000 of the Average Strength.
Cholera ...	·74	86·67	6·41	·68	80·88	5·55	·12	66·67	·78	1·13	64·15	7·25	·03	50·00	·14	·43	72·50	3·12	
Small-pox ...	·10	...	...	·24	8·33	·20	·62	28·12	1·76	·32	...	...	·14	20·00	·29	·29	14·28	·40	
Fever, Intermittent...	32·35	1·20	·49	27·82	1·11	1·01	11·85	·80	·59	53·40	·45	·64	48·47	·46	·65	36·88	·70	·73	1·53
Fever, Remittent and Continued ...	29·48		6·91	16·75		3·93	27·00		2·54	17·39		2·56	9·61		2·02	15·97		2·98	
Apoplexy ...	·74	40·00	2·96	·72	63·33	4·54	·51	73·08	3·71	·43	50·00	2·13	·53	41·89	2·23	·57	52·36	2·98	
Delirium Tremens ...	·64	...	...	·30	13·33	·40	·31	6·25	·19	·53	20·00	1·07	·32	2·27	·07	·36	9·56	·35	
Dysentery ...	9·52	5·18	4·93	4·45	6·11	2·72	3·89	4·02	1·56	4·14	2·58	1·07	2·62	6·59	1·73	4·10	5·42	2·23	2·91
Diarrhœa ...	20·07	1·47	2·96	9·55	·74	·71	6·70	·29	·19	15·31	·56	·85	7·99	·18	·14	9·94	·65	·64	
Hepatitis ...	4·04	6·10	2·46	5·95	5·08	3·03	7·20	3·52	2·55	6·21	8·94	5·55	6·35	5·45	3·46	6·25	5·59	3·49	6·31
Spleen Disease ...	·54	...	...	·37	2·70	·10	·84	2·33	·19	1·26	1·70	·21	·63	.....	...	·67	1·20	·08	
Respiratory Diseases	8·97	1·10	·99	6·21	1·45	·91	7·71	·25	·19	6·78	·31	·43	8·88	1·22	1·08	7·71	1·25	·97	1·45
Phthisis Pulmonalis	·89	16·67	1·48	·63	17·74	1·11	·92	10·64	·98	·47	18·18	·85	·63	23·86	1·51	·70	19·69	1·38	3·09
Scurvy ...	...	...	...	·08	...	·10	·08	...	...	·06	...	...	·17	.....	·07	·10	5·26	·05	
Rheumatism ...	11·59			7·77			9·08			9·21			8·45			8·59		...	5·35
Venereal Diseases ...	26·63			28·13			25·91			24·78			16·30			22·72		...	3·20
Eye Diseases ...	2·76	·15	1·47	3·05	·43	2·82	3·16	·46	3·71	3·65	·40	3·41	3·28	·63	3·89	3·23	·43	3·42	1·07
Abscess and Ulcer ...	12·38			10·50			14·23			12·90			11·54			11·90			...
Wounds and Accidents	12·23			8·12		·20	9·72		·19	10·85			11·28		·44	10·14		·24	·88
All other Causes ...	31·16			15·68			22·57			24·70			18·67			19·98		...	21·03
Died out of Hospital	...	...	2·47	...	...	1·81	...	...	·59	...	...	·85	...	.....	·87	...	...	1·61*	...
	204·83	...	33·53	117·03	...	29·14	152·42	...	19·72	193·52	...	26·87	155·89	.....	18·59	160·53	...	24·67*	46·87

* With absent deaths which are not included in the body of the Return.

EUROPEAN TROOPS, 1865.

VIII.

TABLE showing the GENERAL STATISTICS of SICKNESS and MORTALITY in the PRINCIPAL MILITARY STATIONS of the BENGAL PRESIDENCY.

STATIONS.	Period of Observation.	Average Strength during the period of occupation.	Daily Sick per cent. of Average Strength in each Month.												Daily sick per cent. of average Strength for the period of occupation.	Admitted per cent. of Average Streugth.	Died per 1000 of Average Strength.			
			Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.			A. Cholera.	B. All other causes. 1. In Hospital.	B. All other causes. 2. Out of Hospital.	C. All Causes.
Fort William ...	... ...	789	5·08	6·85	8·29	7·61	6·77	8·34	9·34	9·37	8·58	7·42	5·23	4·17	7·22	171·23	1·27	11·40	1·27	13·94
Dum-Dum ...	11 Months, Jan. Feb. & Apl. to Dec..	717	4·19	4·28	...	6·07	11·14	12·76	7·70	7·66	9·73	14·28	8·35	9·19	8·09	235·14	13·95	39·05	4·18	57·18
Barrackpore ...	... ...	357	8·90	10·00	8·03	9·48	10·17	10·20	12·78	7·91	10·49	11·60	9 78	9·55	9·90	222·13	2·80	33·62	2·80	39·22
Berhampore ...	... ...	147	4·52	4·87	4·80	4·08	8·22	7·58	8·96	6·90	8·33	9·72	6·77	3·00	6·47	220·41	6·80	6·80	...	13·60
Artillery of the Bhootan Field Force ...	... ...	145	4·11	1·35	4·05	3·82	10·53	8·95	10·27	6·21	4·93	5·26	9·33	10·27	6·29	239·86	20·69	49·33	6·90	76·92
Darjeeling, Sinchal ...	9 Months, April to December ...	915	...	...	...	4·30	4·51	5·80	7·55	7·39	5·59	6·38	5·54	4·85	5·79	94·10	...	13·11	1·09	14·20
Hazareebaugh ...	10 Months, March to December ...	851	...	...	5·23	7·67	7·09	8·84	8·27	9·45	8·76	7·39	6·58	3·38	7·29	142·07	...	22·33	...	22·33
Dinapore ...	... ...	1,062	5·24	5·52	4·86	5·95	6·12	6·53	5·07	6·28	7·39	6·79	5·96	5·37	5·93	157·44	·94	16·01	·94	17·89
Benares ...	... ...	998	5·19	5·02	6·69	6·83	9·55	17·24	14·41	11·41	10·40	7·89	8·18	6·49	9·02	236·07	9·62	29·06	3·00	41·08
Aziunghur ...	9 Months, February to October ...	204	...	3·40	2·91	3·88	4·85	5·37	4·43	3·94	5·97	8·59	...	...	4·79	104·90	...	...	...	19·61
Fyzabad ...	... ...	953	3·87	4·39	5·20	6·11	6·31	7·16	6·76	6·54	7·20	8 10	5·03	4·43	5·93	153·73	11·54	43·02	3·15	57·71
Roy Bareilly ...	... ...	386	3·41	3·09	4·87	5·14	4·11	5·94	4·93	4·95	7·77	8·67	6·01	5·08	5·33	109·84	...	18·14	2·59	20·73
Luckuow ...	... ...	1,884	4·80	4·32	6·45	6·28	5·92	5·77	5·39	5·88	6·54	7·79	6·83	5·35	5·81	118·47	10·62	15·39	1·06	27·07
Seetapore ...	... ...	583	3·78	3·71	5·80	5·41	5·43	6·48	6·81	8·22	7·73	7·56	4·00	3·42	5·70	141·33	...	...	...	20·58
Futtehghur ...	10 Months, March to December ...	203	...	...	4·16	2·34	6·56	6·00	3·69	3·21	6·31	6·76	4·52	3·49	4·78	125·61	...	...	...	24·63
Cawnpore ...	... ...	880	3·43	5·29	5·31	5·09	5·11	5·34	5·48	6·86	6·90	6·41	5·27	3·84	5·38	144·32	1·14	17·04	2·27	20·45
Allahabad ...	... ...	1,013	3·67	5·00	5·18	4·72	3·89	4·42	3·14	4·73	4·57	3·88	3 90	3·19	4·19	122·01	9·87	20·73	2·96	33·56
Nagode ...	... ...	176	7·56	5·65	3·89	4·45	6·14	6·74	4·60	9·25	5·20	8·72	4·43	2·54	5·73	108·52	17·05	28·41	11·36	56·82
Shahjehanpore ...	... ...	484	6·12	5·09	5·75	7·00	7·56	6·56	9·85	9·19	7·49	6·19	4·62	2·55	6·45	182·04	..	...	...	10·33
Bareilly ...	... ...	853	5·48	6·27	6·33	6·03	5·29	5·91	6·49	7·19	7·09	5·76	5·90	4·58	6·03	103·75	2·34	11·73	...	14·07
Nynee Tal Depôt ...	6 Months, May to October ...	307	...	...	...	...	12·54	9·81	9·23	10·86	9·26	7·64	...	...	9·88	66·78	...	13·02	3·26	16·28
Laudour Depôt ...	7 Months, April to October ...	208	...	...	...	11·80	13·57	11·63	14·88	13·68	11·85	11·06	...	...	12·64	177·89	...	...	...	28·84
Moradabad ...	... ...	254	6·00	7·12	1·20	2·40	5·20	6·40	6·80	6·32	6·40	4·78	2·49	2·94	4·89	86·21	...	...	...	3·94
Roorkee ...	... ...	554	4·84	3·91	4·13	3·92	4·94	4·74	5·26	6·00	5·46	5·15	5·13	4·74	4·84	105·05	...	...	...	7·22
Meerut ...	... ...	1,783	5·96	6·01	6·28	5·79	6·89	7·45	11·00	9·25	7·81	7·61	6·50	4·87	7·14	188·67	1·12	20·19	1·12	22·43
Delhi ...	... ...	434	2·91	3·81	5·19	5·61	5·85	7·53	9·21	8·11	9·76	8·40	7·05	5·37	6·28	158·99	...	...	...	36·87
Muttra ...	... ...	394	6·03	9·25	9·41	7·22	8·53	8·03	7·81	5·73	7·35	7·11	6·59	5·58	7·36	126·65	...	...	...	22·84
Agra ...	... ...	876	5·17	6·86	7·74	5·59	7·04	7·48	7·83	6·71	7·15	7·60	5·06	4·49	6·61	183·34	...	20·55	1·14	21·69
Morar ...	... ...	1,115	5·07	6·20	6·33	7·60	6·36	6·32	6·53	4·60	5·41	6·17	5·09	4·72	5·88	171·39	7·17	18·84	·90	26·91
Gwalior Citadel ...	... ...	213	4·20	6·31	7·94	7·98	7·04	7·44	3·57	6·25	5·00	6·54	7·32	6·12	6·30	118·31	9·39	11·08	...	23·47
Seepree ...	8 Months, March to October ...	152	...	...	6·58	5·92	5·19	5·88	5·88	9·15	11·84	10·00	...	...	7·57	94·08	...	...	...	19·74
Jhansi ...	... ...	667	6·05	6·27	5·81	6·22	5·92	4·12	5·07	8·02	9·51	13·57	11·85	6·09	7·35	196·55	...	...	...	17·99
Nowgong ...	... ...	208	2·62	2·93	1·83	2·40	2·40	2·89	4·80	3·84	2·40	1·92	1·42	2·37	2·65	100·48	...	...	...	4 81
Saugor ...	... ...	820	7·27	6·90	8·03	7·07	8·25	7·93	7·38	7·99	11·51	11·11	9·49	6·73	8·29	260·85	21·95	29·27	...	51·22
Jubbulpore ...	... ...	688	4·46	5·11	3·84	4·21	5·20	5·63	5·37	5·76	6·67	7·53	3·93	3·38	5·11	218·46	8·72	11·63	...	20·35
Umballa ...	... ...	1,477	3·51	4·62	5·53	5·26	6·09	7·25	7·51	7·36	6·84	6·03	5·42	4·39	5·83	167·84	...	12·87	1·35	14·22
Dugshaie ...	11 Months, February to December ...	889	...	3·87	3·54	3·88	3·99	4·65	6·00	4·40	4·07	3·38	2·26	1·43	3·78	102·36	...	...	...	13·50
Kussowlie Depôt ...	6 Months, May to October ...	606	...	...	...	...	10·54	10·66	11·29	8·94	7·21	4·45	...	...	8·91	71·12	3·30	23·10	...	26·40
Subathoo ...	10 Months, March to December ...	601	...	...	11·07	10·91	9·64	9·80	10·77	10·77	10·44	8·02	4·71	3·65	7·54	140·93	...	...	...	4·99
Phillour ...	... ...	78	5·26	6·52	4·11	4·11	8·70	11·60	10·14	8·95	10·30	6·85	...	4·30	7·27	158·98	...	...	...	...
Jullundur ...	11 Months, January to Oct. and Dec.	776	2·29	2·88	4·17	2·36	3·00	2·46	3·00	2·75	3·02	3·09	...	5·51	3·09	93·56	...	...	...	6·44
Ferozepore ...	... ...	788	4·19	4·34	4·98	5·27	6·25	6·51	6·85	6·64	5·96	4·66	3·79	3·12	5·35	150·76	...	17·77	1·27	19·04
Mooltan ...	... ...	867	5·06	4·04	4·17	4·67	4·62	5·09	6·33	4·00	4·38	3·55	2·25	2·24	4·17	125·95	...	35·75	2·31	38·06
Dera Ismail Khan ...	... ...	99	9·20	4·00	8·0	8·00	8·00	8·00	6·00	10·00	6·00	5·00	3·00	4·00	6·57	122·22	...	10·10	10·10	20·20
Sealkote ...	... ...	1,185	3 65	3·78	3·91	4·60	4·44	4·52	5·57	5·19	4·56	4·37	5·35	3·60	4·45	113·50	...	...	...	11·81
Kangra ...	... ...	83	3·00	4·00	5·06	5·06	4·11	2·86	...	4·41	4·48	3·03	1·00	3·10	3·61	114·46	...	12·05	12·05	24·10
Dhurmsalla ...	7 Months, April to October ...	121	...	...	...	6·89	11·20	11·11	11·02	9·45	7·81	9·28	...	...	9·56	113·22	...	...	...	...
Umritsur ...	11 Months, February to December ...	147	...	1·16	4·44	4·94	3·43	4·00	1·99	2·65	4·61	3·31	2·04	·68	2·96	81·63	...	...	...	27·21
Fort Lahore ...	... ...	136	3·00	3·12	1·84	3·18	8·59	6·06	6·50	4·00	3·85	7·24	10·81	4·15	5·46	214·71	...	44·12	7·35	51·47
Meean Meer ...	... ...	1,038	3·86	3·56	4 29	2·87	4·67	6·55	8·58	5·72	5·27	7·22	4·90	4·41	5·15	127·37	...	30·83	1·93	32·76
Rawul Pindee ...	... ...	1,450	4·41	4·24	4·48	4·59	4·54	4·71	4·84	4·61	5·43	4·96	5·17	4·15	4·63	132·55	...	12·41	·69	13·10
Camphellpore ...	... ...	408	4·62	4·83	5·25	5·38	6·40	8·64	8·21	7·35	6·75	6·28	4·00	4 18	5·80	153·92	...	...	...	19·61
Attock ...	... ...	156	3·65	4·67	3·68	3·11	2·50	3·18	2·55	1·91	3·16	5·10	7·69	3·16	3·69	114·10	...	...	...	32·05
Murree Convalescent Depôt ...	6 Months, May to October ...	376	...	...	...	...	7·69	8·71	8·90	10·42	8·55	5·61	...	...	8·24	110·90	...	...	...	15·96
Road-making Detachments, Murree Hills	6 Months, May to October ...	643	...	...	...	...	·62	1·54	2·62	1·89	2·51	5·01	...	...	2·02	41·21	...	4·68	1·54	6·22
Nowshera ...	... ...	611	3·49	3·98	3·00	2·76	5·27	6·21	7·78	7·60	5·01	6·58	7·11	5·29	5·20	191·00	...	...	...	19·64
Peshawur ...	... ...	1,740	7·50	5·97	7·14	7·33	10·17	10·69	13·38	11·81	6·63	5·65	4·09	4·28	7·87	283·74	...	...	...	17·24

EUROPEAN TROOPS, 1865.

IX.

TABLE showing the ratio in which the PRINCIPAL DISEASES have contributed to make up the ADMISSION-RATE of the year, in the CHIEF MILITARY STATIONS of the BENGAL PRESIDENCY.

STATIONS...	Average Strength during the period of occupation.	Admitted into Hospital per cent. of Average Strength.											Admitted per cent. of the Average Strength from all causes.
		Cholera.	Heat Apoplexy.	Fevers.	Dysentery.	Diarrhœa.	Hepatitis.	Ophthalmia.	Rheumatism.	Venereal Diseases.	Diseases of the Respiratory Organs.	All other Causes.	
Fort William ...	789	...	·13	33·08	5·32	12·93	3·29	4·18	14·83	31·43	13·31	52·73	171·23
Dum-Dum (11 months) ...	717	1·81	1·81	90·38	17·57	33·33	4·88	2·09	5·02	15·48	4·19	58·53	235·14
Barrackpore ...	357	·28	·28	69·47	5·04	12·05	4·48	1 12	12·05	36·97	4·20	76·19	222·13
Berhampore ...	147	·68	...	65·99	4·76	15·65	3·40	2·72	26·53	33·33	21·77	45·58	220·41
Artillery of the Bhootan Field Force ...	145	3·50	·70	90·91	31·27	31·47	9·09	3·50	13·23	9·79	12·59	30 76	230·86
Darjeeling (9 months) ...	915	...	...	21·53	2·62	9·40	4·59	·76	7·65	16·29	6·45	24·81	94·10
Hazareebaugh (10 months) ...	851	...	...	27·50	4·94	8·58	8·46	3·53	17 39	20·63	6·93	44·06	142·07
Dinapore ...	1,062	·28	·19	57·25	8·66	8·19	5·37	4·24	6·50	30·32	5·93	30·51	157·44
Benares ...	908	1·10	1·20	85·77	5·51	22·95	7·61	3·91	9·82	49·59	8·82	39·88	236·07
Azimghur (9 months) ...	204	...	1·96	45·10	4·41	·98	1·47	1·47	1·47	26·96	3·92	17·16	104·90
Fyzabad ...	953	1·36	3·77	58·55	4·97	6·82	3·04	2·93	3·25	30·43	3·67	34·94	153·73
Rae Bareilly ...	386	...	·78	39·89	·26	3·11	3·88	1·30	3·37	19·95	8·03	29·27	109·84
Lucknow ...	1,884	1·22	·11	28·23	3·40	7·80	6·37	4·03	5·26	18·84	6·16	37·05	118·47
Seetapore ...	583	...	·34	34·13	5·66	10·12	6·69	2·92	5·32	40·82	6 87	28·47	141·33
Futtehghur (10 months) ...	203	...	...	70·44	3·45	3·94	4·93	1·97	4·93	15·76	2·46	17·73	125·61
Cawnpore ...	880	·11	·57	50·23	2·27	6·93	4·77	1·82	6·37	28·98	4·09	38·18	144·32
Allahabad ...	1,013	1·38	·49	28·63	3.65	9·68	5·53	2·07	8·98	22·90	3·55	35·15	122·01
Nagode ...	176	1·70	...	15·91	1·70	5·11	3·41	1·14	9·09	19·89	10·23	40·34	108·52
Shahjehanpore ...	484	...	...	26·24	3·97	8·47	4·95	2·27	6·61	51·24	13·63	64·66	182·04
Bareilly ...	853	·35	·35	22·86	3·99	2·23	6·45	2·81	8·91	16·29	4·81	31·70	103·75
Nynee Tal Depôt (6 months) ...	307	...	...	13·36	·98	9·12	5·21	·98	4·56	7·49	4·88	20·20	66·78
Landour Depôt (7 months) ...	208	...	...	6·73	1·92	6·73	34·62	7·69	17·79	17·79	16·83	67·79	177·89
Moradabad ...	254	...	...	16·53	5·12	4·72	8·66	3·15	3·94	20·08	3·54	20·47	86·21
Roorkee ...	554	...	·18	21·12	3·25	4·87	2·16	4·15	9·93	21·30	7·76	30·33	105·05
Meerut ...	1,783	·17	·96	60·57	4·26	8·92	7·12	3·31	9·87	26 08	6·67	60·74	188·67
Delhi ...	434	...	·92	59·45	3·92	6·68	2·53	1·38	7·84	34·56	8·07	33·64	158 99
Muttra ...	394	...	·25	25·38	3·30	1·27	5·84	2·28	4·31	17·77	7·36	58·89	126·65
Agra ...	876	...	·46	57·54	2·40	12·21	7·08	3·88	14·49	17·92	9·84	57·88	183·34
Morar ...	1,115	1·08	·54	42·60	3·85	11·12	7·26	3·24	8·97	27·80	7·62	57·31	171·39
Gwalior Citadel ...	213	·92	·47	31·46	3·29	8·45	2·82	3·76	5·14	15·04	3·76	43·20	118·31
Seepree (8 months) ...	152	...	...	53·95	1·97	6·58	·66	5·26	3·29	11·19	·66	10·52	94·08
Jhansie ...	667	·15	·30	89·95	5·10	10·04	4·34	4·65	7·05	20·39	5·40	49·18	196·55
Nowgong ...	208	...	...	22·12	3·36	5·29	4·81	4·33	6·25	14·90	7·21	32·21	100·48
Saugor ...	820	3·78	·37	100·24	5·73	28·17	8·78	3·05	7·80	35·61	7·32	60·00	260·85
Jubbulpore ...	688	1·02	·58	105·09	4·65	21·80	4·36	2·91	9·45	27·18	4·36	37·06	218·46
Umballa ...	1,477	...	·20	50·85	2·03	10·76	4·74	2·71	11·24	16·52	12·32	56·47	167·84
Dugshaie (11 months) ...	889	·11	·11	13·05	3·04	18·78	4·50	3·93	7·99	14·18	8·21	28·46	102·36
Kussowlie Depôt (6 months) ...	606	·33	·33	12·87	1·65	5·61	6·43	·82	9·41	9·08	3·30	21·29	71·12
Subathoo (10 months) ...	601	...	·17	35·61	2·50	7·65	4·66	9·82	7·65	15·31	5·82	51·74	140·93
Phillour ...	78	1·28	...	47·44	1·28	11·54	3·85	3·85	12·85	23·08	8 97	44·87	158·98
Jullundur (11 months) ...	776	...	...	34·67	2·96	2·19	6·57	2·78	4·64	9·92	5·16	24·74	93 56
Ferozepore ...	788	...	·64	46·07	4·06	8·50	7·36	2·28	10·53	11·80	12·06	47·46	150·76
Mooltan ...	867	...	1·15	41·52	2·30	7·04	6·34	1·61	7·96	13·95	10·61	33·47	125·95
Dera Ismael Khan ...	99	...	...	28·29	1·01	3·03	8·08	4·04	8·08	9·09	10·10	50·50	122·22
Sealkote ...	1,185	...	·34	27·43	·59	4·14	4·47	5·04	8·27	13·00	6·49	45·73	113·50
Kangra ...	83	...	...	13·25	4·82	4·82	10·85	4·82	10·85	21·68	10·85	32·52	114·46
Dhurmsalla Depôt (7 months) ...	121	...	...	19·00	4·13	9 92	9·92	1·65	30·58	9·09	4·13	24·80	113·22
Umritsur (11 months) ...	147	...	...	19·73	·68	6·12	4·08	2·04	4·08	6·12	4·08	34·70	81 63
Fort Lahore ...	136	...	2·94	109·56	·74	5·15	4·41	1·48	8·09	22·05	7·35	52·94	214·71
Meean Meer ...	1,038	...	1·06	48·07	1·64	5·88	5·01	1·93	5·20	10·79	7·23	40·56	127·37
Rawul Pindee ...	1,450	...	·14	30·07	2·14	4·90	6·27	4·00	6 27	19·93	10·00	48·83	132·55
Campbellpore ...	408	...	·74	41·67	·24	4·17	4·41	5·15	7·84	30·39	5·39	53·92	153·92
Attock ...	156	...	1·28	48·72	2·57	1·92	1·92	2·57	3·21	14·74	4·48	32·69	114·10
Murree Depôt (6 months) ...	376	...	...	47·61	2·39	3·72	12·24	2·39	4·52	7·98	3·72	26·33	110·90
Road-making Detachments, Murree Hills (6 months) ...	643	...	...	7·31	2·33	1·87	1·56	·31	4·51	6·99	3·58	12·75	41·21
Nowshera ...	611	...	2·45	106·71	2·78	6·38	5·56	1·97	5·40	13·58	9·33	36·84	191·00
Peshawur ...	1,740	...	·58	168·51	4·14	12·01	8·62	2·76	8·22	21·89	10·40	46·61	283·74

EUROPEAN TROOPS, 1865.

X.

TABLE showing the PREVALENCE of SMALL-POX in each Month, and the distribution of the DISEASE by STATIONS and PROVINCES.

STATIONS.	Average Strength during the period of occupation.	Number of Admissions into Hospital in each Month.												Total Admissions.	Admitted per cent. of Average Strength.	Number of Deaths.	Died per 1000 of Average Strength.
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Augt.	Sept.	Oct.	Nov.	Dec.				
Kidderpore Hospital ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chinsurah Depôt ...	...	...	2	...	...	...	...	...	...	...	...	...	...	2	...	...	...
Allahabad General Hospital ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Invalids, Recruits, and Time-expired men on the march...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bhootan Field Force ...	145	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fort William ...	789	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Dum-Dum ...	717	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Barrackpore ...	357	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Berhampore ...	147	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	2,028	2	...	...	...	...	...	...	...	...	...	...	...	2	·10	...	...
Darjeeling ...	915	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Darjeeling Depôt ...	39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Parasnath Depôt ...	28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hazareebaugh ...	851	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dinapore ...	1,062	1	...	1	...	...	...	...	...	...	...	...	...	2	...	...	...
Benares ...	998	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Azimghur ...	204	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fyzabad ...	953	...	...	1	1	2	1	...	...	...	...	...	...	5	...	...	...
Rae Bareilly ...	386	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lucknow ...	1,884	5	3	5	2	...	...	...	...	...	...	...	...	15	...	2	...
Seetapore ...	583	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Futtehghur ...	203	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...
Cawnpore ...	880	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Allahabad ...	1,013	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nagode ...	176	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	9,917	7	3	7	4	2	1	...	...	...	...	...	...	24	·24	2	·20
Shahjehanpore ...	484	1	...	...	1	...	...	...	...	...	...	...	...	2	...	...	...
Bareilly ...	853	...	1	...	1	2	...	...	...	...	...	...	...	4	...	...	...
Nynee Tal ...	307	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...
Landour ...	208	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...
Moradabad ...	254	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Roorkee ...	554	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Meerut ...	1,783	4	6	4	1	...	...	...	...	...	...	...	1	16	...	6	...
Delhi ...	434	..	1	2	2	...	...	...	...	...	...	...	...	5	...	2	...
Muttra ...	394	1	...	...	1	1	...	...	...	...	...	...	...	3	...	1	...
	5,122	6	8	6	8	3	...	...	...	...	...	...	1	32	·62	9	1.76
Agra ...	876	2	3	3	1	...	...	...	...	...	...	...	...	9	...	...	...
Morar ...	1,115	1	2	...	...	...	...	...	...	...	...	...	...	3	...	...	...
Gwalior Citadel ...	213	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Seepree ...	152	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Jhansi ...	667	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...
Nowgong ...	208	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Saugor ...	820	...	1	1	...	...	...	...	...	...	...	...	...	2	...	...	...
Jubbulpore ...	688	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	4,689	3	6	4	1	1	...	...	...	...	...	...	...	15	·32	...	...
Umballa ...	1,477	...	...	...	1	2	...	...	...	...	...	2	...	5	...	1	...
Dugshaie ...	889	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...
Kussowlie Depôt ...	606	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Subathoo ...	601	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Phillour ...	78	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Jullundur ...	776	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ferozepore ...	788	...	...	...	3	...	...	...	...	...	...	...	...	3	...	1	...
Mooltan ...	867	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dera Ismail Khan ...	99	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sealkote ...	1,185	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kangra ...	121	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dhurmsalla ...	83	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Umritsur ...	147	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fort Lahore ...	136	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Meean Meer ...	1,038	5	...	...	...	...	...	...	...	...	...	...	...	5	...	1	...
Rawul Pindee ...	1,150	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Campbellpore ...	408	...	...	...	...	...	...	...	...	...	...	1	...	1	...	1	...
Attock ...	156	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Murree Depôt ...	376	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...
Road-making Detachments Murree Hills ...	643	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nowshera ...	611	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Peshawur ...	1,740	3	...	...	1	...	...	...	...	...	...	...	...	4	...	...	...
Nundcote ...	130	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Troops on the march (Punjab). ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	13,880	8	...	...	5	3	...	...	...	...	...	3	1	20	·14	4	·29
Troops on the march, Bengal...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
,, ,, N. W. Provinces	...	9	4	...	...	...	...	...	...	...	...	...	...	13	...	...	...
Bengal Presidency ...	37,210	35	23	17	18	9	1	...	...	...	...	3	2	108	·29	15	·40

EUROPEAN TROOPS, 1865.

XI.

TABLE showing the PREVALENCE of CHOLERA in each Month, and the distribution of the DISEASE by STATIONS and PROVINCES.

STATIONS.	Average Strength during the period of occupation.	Number of Admissions into Hospital in each Month.												Total Admissions.	Admitted per cent. of Average Strength.	Number of Deaths.	Died per 1000 of Average Strength.
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Augt.	Sept.	Oct.	Nov.	Dec.				
Kidderpore Hospital ...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	...	1	...
Chinsurah Depôt ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Allahabad General Hospital ...	...	...	...	...	...	1	...	...	1	...	...	...	...	2	...	...	...
Invalids, Recruits, and Time-expired men on the march ...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	1	...
Bhootan Field Force ...	145	...	...	1	...	3	...	1	...	...	...	...	...	5	...	3	...
Fort William ...	789	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
Dum-Dum ...	717	...	...	...	1	10	...	...	...	...	1	...	1	13	...	10	...
Barrackpore ...	357	...	...	...	...	1	...	...	...	...	...	...	...	1	...	1	...
Berhampore ...	147	...	...	...	...	1	...	...	...	...	...	...	...	1	...	1	...
	2,028	...	...	...	1	12	...	...	...	...	1	...	1	15	·74	13	6·41
Darjeeling ...	915	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Darjeeling Depôt ...	39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Parasnath Depôt ...	28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hazareebaugh ...	851	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dinapore ...	1,062	...	...	...	...	...	...	...	...	...	...	1	2	3	...	1	...
Benares ...	998	4	...	...	7	...	...	...	...	...	...	...	...	11	...	9	...
Azimghur ...	204	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fyzabad ...	953	...	...	...	13	...	...	...	...	...	...	...	...	13	...	11	...
Rae Bareilly ...	386	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lucknow ...	1,884	...	...	...	1	2	...	...	14	6	...	...	...	23	...	20	...
Sectapore ...	583	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Futtehghur ...	203	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cawnpore ...	880	...	...	...	...	...	...	...	...	1	...	...	...	1	...	1	...
Allahabad ...	1,013	...	...	...	6	...	...	...	5	3	...	...	...	14	...	10	...
Nagode ...	176	...	...	...	...	...	3	...	...	...	...	...	...	3	...	3	...
	9,917	4	...	...	27	2	3	...	19	10	...	1	2	68	·68	55	5·55
Shahjehanpore ...	484	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bareilly ...	853	...	...	...	...	...	...	...	...	3	...	...	...	3	...	2	...
Nynee Tal ...	307	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Landour ...	208	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Moradabad ...	254	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Roorkee ...	554	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Meerut ...	1,783	...	...	...	...	1	...	...	...	...	1	1	...	3	...	2	...
Delhi ...	434	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Muttra ...	394	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	5,122	...	...	...	...	1	...	...	...	3	1	1	...	6	·12	4	·78
Agra ...	876	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Morar ...	1,115	...	...	...	...	...	...	1	10	1	...	...	...	12	...	8	...
Gwalior Citadel ...	213	...	...	...	...	...	...	...	2	...	...	...	...	2	...	2	...
Seepree ...	152	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Jhansi ...	667	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...
Nowgong ...	208	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Saugor ...	820	...	...	...	...	...	...	6	25	...	...	...	...	31	...	18	...
Jubbulpore ...	688	...	...	...	...	...	...	...	7	...	...	...	...	7	...	6	...
	4,689	...	...	...	...	...	...	8	44	1	...	...	...	53	1·13	34	7·25
Umballa ...	1,477	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dugshaie ...	889	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...
Kussowlie Depôt ...	606	...	...	...	...	...	1	1	...	...	...	...	...	2	...	2	...
Subathoo ...	601	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Phillour ...	78	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...
Jullundur ...	776	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ferozepore ...	788	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mooltan ...	867	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dera Ismail Khan ...	99	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sealkote ...	1,185	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dhurmsalla ...	83	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kangra ...	121	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Umritsur ...	147	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fort Lahore ...	136	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mean Meer ...	1,033	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rawul Pindee ...	1,450	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Campbellpore ...	408	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Attock ...	156	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Murree Depôt ...	376	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Road-making Detachments Murree Hills ...	643	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nowshera ...	611	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Peshawur ...	1,740	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nundcote Depôt ...	130	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Troops on the march (Punjab).	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	13,880	...	...	...	...	2	1	1	...	...	...	...	...	4	·03	2	·14
Troops on the march, Bengal...	...	...	...	...	3	...	...	...	...	...	...	...	...	3	...	2	...
„ „ N. W. Provinces...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	1	...
Bengal Presidency ...	37,210	5	1	4	28	21	4	10	64	14	2	2	5	160	·43	116	3·12

EUROPEAN TROOPS, 1865.

XII.

TABLE Showing the MORTALITY in each STATION, the CAUSES of DEATH, and the ratio of DEATHS to STRENGTH.

STATIONS.	Average Strength for the period of observation.	Causes of Deaths in Hospital.																			Died out of Hospital.	Total Deaths of the year.	Died per 1000 of Average Strength.			
		Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds & Accidents.	All other causes.			A. Cholera	B. All other causes. 1. In Hospital.	B. All other causes. 2. Out of Hospital.	C. All Cau
Kidderpore Hospital ...	...	1	...	1	...	1	...	...	4	2	4	...	2	...	4	...	...	1	...	2	...	22	...	...	...	...
Chiusurah Depôt ...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Allahabad General Hospital ..	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	1	...	3	...	...	...	...
Invalids, Recruits, and Time-expired men on the march ...	...	1	...	...	...	1	...	1	...	...	2	...	1	2	3	...	...	...	...	2	1	14	...	...	...	...
Bhootan Force (Artillery) ...	145	3	...	...	3	...	...	...	3	...	...	...	1	...	...	...	...	...	...	...	1	11	20·70	48·26	6·90	75
Fort William ...	789	1	...	1	2	1	...	...	3	2	...	...	...	...	...	...	...	...	...	...	1	11	1·27	11·40	1·27	13
Dum-Dum ...	717	10	...	...	6	...	6	...	6	2	4	...	2	1	1	...	...	...	...	...	3	41	13·95	39·05	4·18	57
Barrackpore ...	357	1	...	...	4	1	...	...	1	2	1	...	...	...	1	...	...	1	...	1	1	14	2·80	33·62	2·80	39
Berhampore ...	147	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	2	6·80	6·80	...	13
	2028	13	...	1	12	2	6	...	10	6	5	...	2	1	3	...	...	1	...	1	5	68	6·41	24·65	2·47	33
Darjeeling ...	915	...	...	1	...	1	...	...	2	3	1	...	1	1	...	...	...	...	1	1	1	13	...	13·11	1·09	14
Darjeeling Depôt ...	39	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Parasnath Depôt ...	28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hazareebaugh ...	851	...	...	2	1	1	...	1	9	...	2	...	1	...	...	...	...	2	...	...	...	19	...	...	...	22
Dinapore ...	1062	1	...	1	1	2	1	...	...	...	5	...	2	...	2	...	...	1	...	2	1	19	·94	16·01	·94	17
Benares ...	998	9	...	3	1	9	8	...	3	1	1	...	...	...	2	...	...	...	...	1	3	41	9·02	29·06	3·00	41
Azimghur ...	204	...	...	...	...	...	2	...	...	...	...	...	1	...	1	...	...	...	...	...	...	4	...	...	...	19
Fyzabad ...	953	11	...	...	...	6	21	...	6	1	3	...	1	...	1	...	...	...	...	2	3	55	11·54	43·02	3·15	57
Rae Bareilly ...	386	...	...	...	...	...	3	...	...	...	2	...	1	...	1	...	...	...	...	...	1	8	...	18·14	2·59	20
Lucknow ...	1884	20	2	3	6	...	2	...	2	...	6	...	...	1	2	...	1	1	1	2	2	51	10·62	15·39	1·06	27
Seetapore ...	583	...	...	...	2	2	1	...	...	...	3	...	1	2	1	...	...	...	...	...	...	12	...	...	...	20
Futtehghur ...	203	...	...	...	...	2	...	...	...	...	1	...	1	1	...	...	...	...	...	...	...	5	...	...	...	24
Cawnpore ...	889	1	...	...	...	3	3	2	2	1	1	...	...	1	1	...	...	...	...	1	2	18	1·14	17·04	2·27	20
Allahabad ...	1013	10	...	...	2	...	4	1	3	1	4	1	...	2	...	...	...	...	...	3	3	34	9·87	20·73	2·96	33
Nagode ...	176	3	...	...	...	...	...	...	...	...	1	...	...	4	...	...	...	...	...	...	2	10	17·05	28·41	11·36	56
	9917	55	2	10	13	26	45	4	27	7	30	1	9	12	11	...	1	4	2	12	18	239	5·55	21·78	1·81	29
Shahjehanpore ...	434	...	...	...	...	...	...	...	...	...	1	...	...	1	2	...	...	...	...	1	...	5	...	...	...	10
Bareilly ...	853	2	...	...	3	1	2	1	...	...	3	...	...	...	...	...	...	...	...	...	...	12	2·34	11·73	...	14
Nynee Tal Depôt ...	307	...	...	...	...	1	...	...	1	...	1	...	...	1	...	...	...	...	...	...	1	5	...	13·02	3·26	16
Landour Depôt ...	203	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	6	...	9	...	...	...	28
Moradabad ...	254	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	3
Roorkee ...	554	...	...	1	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	4	...	...	...	7
Meerut ...	1783	2	6	1	1	4	12	...	1	1	3	1	1	1	2	...	...	...	1	1	2	40	1·12	20·19	1·12	22
Delhi ...	434	...	2	...	...	...	3	...	6	...	1	...	...	2	1	...	...	...	...	1	...	16	...	...	...	36
Muttra ...	394	...	1	1	...	1	1	...	...	...	1	...	...	1	...	...	...	...	...	3	...	9	...	...	...	22
	5122	4	9	3	4	9	19	1	8	1	13	1	1	6	5	...	...	...	1	13	3	101	·78	18·35	·59	19
Agra ...	876	...	...	1	1	...	1	2	2	...	6	...	1	1	3	...	...	...	...	...	1	19	...	20·55	1·14	21
Morar ...	1115	8	...	...	2	3	4	1	1	...	4	...	1	2	...	...	...	...	...	3	1	30	7·17	18·84	·90	26
Gwalior Citadel ...	213	2	...	...	...	...	...	...	...	...	2	...	...	1	...	...	...	...	...	...	...	5	9·39	14·08	...	23
Seepree ...	152	...	...	1	...	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	...	3	...	...	...	19
Jhansi ...	667	...	...	...	...	3	2	1	...	...	4	...	...	...	...	...	...	1	...	1	...	12	...	...	...	17
Nowgong ...	203	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	4
Saugor ...	820	18	...	1	2	...	1	1	2	3	8	1	...	...	...	1	...	2	...	2	...	42	21·95	29·27	...	51
Jubbulpore ...	688	6	...	...	1	...	2	...	...	...	2	...	...	1	...	...	...	...	...	...	2	14	8·72	11·63	...	20
	4639	34	...	3	6	6	10	5	5	4	26	1	2	6	4	1	...	3	...	6	4	126	7·25	18·77	·85	26
Umballa ...	1477	...	1	2	...	...	...	...	3	...	1	...	1	1	3	...	...	1	2	4	2	21	...	12·87	1·35	14
Dugshaie ...	889	...	...	...	...	...	...	...	2	...	...	...	1	...	2	...	...	...	...	7	...	12	...	...	...	13
Kussowlie Depôt ..	606	2	...	...	...	3	...	...	1	...	5	...	1	...	4	2	...	...	...	2	...	20	3·30	23·10	...	26
Subathoo ...	601	...	...	...	...	1	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	3	...	...	...	4·9
Phillour ..	78	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Jullundur ...	776	...	...	...	...	...	...	...	1	...	3	...	...	...	1	...	...	...	...	5	...	5	...	...	...	6·4
Ferozepore ...	788	...	1	...	...	...	2	...	2	...	2	...	1	...	4	...	...	...	...	2	1	15	...	17·77	1·27	19
Mooltan ...	867	...	...	2	5	2	8	...	3	...	5	...	2	...	1	...	...	...	...	3	2	33	...	35·75	2·31	38
Dera Ismael Khan ...	99	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	2	...	10·10	10·10	20·2
Sealkotc ...	1185	...	...	...	3	...	...	...	...	...	8	...	...	2	...	...	...	...	...	1	...	14	...	...	...	11·8
Dhurmsalla ...	121	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kangra ...	83	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	1	2	...	12·05	12·05	24·1
Umritsur ...	147	...	...	...	1	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	...	4	...	...	...	27·2
Fort Lahore ...	136	...	...	...	1	...	2	...	...	...	1	...	1	...	...	...	...	1	...	1	...	7	...	44·12	7·35	51·4
Meean Meer ...	1038	...	1	1	2	1	5	1	2	1	6	...	3	2	1	...	1	...	5	2	34	...	30·83	1·93	32·7
Rawul Pindee ...	1450	...	...	...	...	2	1	...	6	...	...	...	3	1	1	...	...	...	1	3	1	19	...	12·41	·69	13·1
Campbellpore ...	408	...	1	...	2	...	...	...	...	...	1	...	...	...	...	...	...	1	...	3	...	8	...	...	...	19·6
Attock ...	156	...	...	...	...	...	3	...	...	...	2	...	...	...	...	...	...	...	...	...	...	5	...	...	...	32·0
Murree Depôt ...	376	...	...	...	...	...	...	...	...	...	3	...	...	1	...	...	...	...	...	2	...	6	...	...	...	15·9
Road-making Detachments Murree Hills ...	643	...	...	...	...	...	...	...	1	...	...	...	...	2	...	...	...	...	...	...	1	4	...	4·68	1·54	6·2
Nowshera ...	611	...	...	...	2	...	5	...	2	1	...	...	...	...	...	...	...	1	...	1	...	12	...	...	...	19·6
Peshawur ...	1740	...	...	4	1	2	5	...	1	...	7	...	1	1	2	...	...	...	2	4	...	30	...	...	...	17·2
Nundcote Depôt ...	130	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...
Troops on the march (Punjab) ...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...
	13,880	2	4	9	17	11	31	1	24	2	48	...	15	11	21	2	1	3	6	38	12	258	·14	17·58	·87	18·5
Troops on the march, Bengal...	...	2	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...
,, ,, N. W. Provinces...	...	1	..	...	...	...	...	1	1	...	1	...	1	...	...	...	...	...	...	...	...	5	...	...	...	...
Bengal Presidency	37,210	116	15	27	55	56	111	13	83	24	130	3	35	38	51	3	2	12	9	75	44	903	3·12	19·91	1·18	24·2

EUROPEAN TROOPS, 1865.

XIII.

TABLE showing the CAUSES of DEATH and INVALIDING.

TOTAL LOSS OF THE ARMY BY DEATH AND INVALIDING, 2646. PER 1000 OF AVERAGE STRENGTH 71·11.

Loss of the Army of the Presidency by Death, 902.				Loss of the Army of the Presidency by Invaliding, 1744.			
CAUSES OF DEATH.	Died in Hospital.	Died out of Hospital.	Died per 1000 of Strength.	CAUSES OF INVALIDING.	Invalided for discharge from the Service.	Invalided for change of Climate.	Invalided per 1000 of Strength.
Cholera	116	...	3·12	Febris	9	50	1·53
Variola	15	...	·40	Ophthalmia	18	22	1·07
Febris Intermittens	27	...	3·71	Dysenteria	5	74	2·91
,, Remittens	55	...		Diarrhœa	9	20	
,, Continua	56	...		Rheumatismus	62	137	5·35
Anthrax	1	...		Syphilis	22	83	3·20
Erysipelas	1	...		Iritis syphilitica	...	2	
Diphtheria	1	...		Bubo	1	...	
Dysenteria	83	...	2·23	Strictura urethræ	4	7	
Diarrhœa	24	...	·64	Anœmia	5	25	
Hydrophobia	2	...		Anasarca	1	1	
Syphilis secundaria	4	...		Scrofula	7	8	
Purpura	2	...		Phthisis pulmonalis	64	47	3·09
Ebriositas	6	...		Hæmoptysis	1	3	
Anœmia	5	...	·13	Tabes mesenterica	...	1	
Anasarca	2	...	·05	Meningitis	1	1	
Carcinoma	4	...		Apoplexia	4	4	
Phthisis pulmonalis	51	...	1·38	Paralysis	13	13	
,, laryngea	1	...		Mania	6	2	
Meningitis	1	...		Monomania	1	...	1·00
Encephalitis	3	...		Melancholia	1	1	
Apoplexia et Insolatio	111	9	3·22	Dementia	20	6	
Paralysis	7	...		Epilepsia	20	5	·67
Delirium tremens	13	...	·35	Cephalœa	3	14	
Epilepsia	2	...		Neuralgia	...	2	
Dementia	1	...		Otitis	1	1	
Pericarditis	3	...		Dysecœa	13	8	
Morbus Cordis	24	4	1·26	Cataracta	1	2	
Aneurisma	11	5		Photophobia	...	1	
Epistaxis	1	...	...	Amblyopia	2	...	
Œdema glottidis	1	...		Pericarditis	2	2	
Laryngitis	1	...		Morbus cordis	64	43	
Bronchitis	10	...		Aneurisma	8	2	3·47
Pleuritis	2	...		Angina Pectoris	4	...	
Hydrothorax	1	...	·90	Palpitatio	1	3	
Empyema	1	...		Varix	12	2	
Asthma	1	...		Bronchitis	19	32	
Pneumonia	17	...		Pleuritis	1	1	1·45
Gangrœna pulmonum	2	...		Pneumonia	1	...	
Apoplexia pulmonum	1	...		Hernia	18	2	
Gastritis	1	...		Dyspepsia	5	10	
Enteritis	3	...		Hæmorrhois	3	5	
Peritonitis	8	...		Fistula in ano	...	5	
Hæmatemesis	1	...		Splenitis	2	13	
Melœna	1	...		Hepatitis	19	216	6·31
Icterus	2	...		Ascites	2	1	
Cirrhosis	3	...		Nephritis	6	2	
Hepatitis	131	...	3·49	Diabetes	...	1	
Splenitis	3	...	·08	Lithiasis	...	1	
Ileus	2	...		Fistula in perineo	...	1	
Ascites	1	...	·03	Cystitis	...	1	
Nephritis	5	...		Orchitis	1	10	
Uræmia	1	...		Hydrocele	...	1	
Fungus Testis	1	...		Varicocele	...	1	
Caries of Vertebræ	2	...		Synovitis	...	1	
Synovitis (death after amputation)	1	...		Arthritis	1	2	
Abscess	1	...		Periostitis	5	2	
Pelvic Abscess	1	...		Necrosis	1	2	
Psoas Abscess	1	...		Caries	1	1	
Cœcal Abscess	1	...		Contractura	1	1	
Perineal Abscess	2	...		Exostosis	1	...	
Atrophy	2	...	·19	Abscess	2	5	
Asthenia	5	...		Ulcer	8	10	
Accident	3	3		Bronchocele	...	1	
Explosion	1	...		Debility and worn out	133	168	*8·89
Fracture of Vertebræ	2	...		Polysarcia	...	1	
Drowned	...	10		Dislocation	3	...	
Suffocated while drunk	...	3	·97	Fracture	7	4	
Asphyxiated	...	2		Contusion	8	4	·88
Homicide	...	1		Gunshot wound	3	1	
Suicide by Gunshot Wound	1	5		Amputation	3	...	
,, by Poison	2	1		Causes not specified	8	...	
,, by Hanging	...	1					
Ratio per 1000 for Deaths from causes not specially calculated	...	...	2·00	Ratio per 1000 for Invaliding from causes not specially calculated	...	...	7·00
	858	44	24·24		639	1097	46·87

Sixteen invalids died in this Presidency before embarking for England. The names of these men appear both in the Death Roll and in the Invaliding Roll, and a deduction should be made from the total loss accordingly. But if the sixteen deaths alluded to in the note to Table 1, be added to the deaths shown in this Table, the ratio of loss by death and invaliding will remain, as shown above, 71·11 per 1000.

* Including Anœmia.

EUROPEAN TROOPS, 1865.

XIV.

Gain and Loss of the Bengal Army in Strength during the year.

At Head-Quarters and on Detachment on 1st January 1865	37,647	
Recruits from England in India on march to join	896	
On Staff employment	192	
In Military and other Prisons	227	
Sick in other Hospitals, including men remaining at Convalescent Depôts	1,343	
Total Strength in India on 1st January 1865 ...		40,305

Additions to the Army during the year.

Transfers received from other Regiments and Batteries	327	
Transferred from Regiments leaving India, by volunteering — from Bengal Presidency ...	916	
Transferred from Regiments leaving India, by volunteering — from other Presidencies ...	340	
Recruited in India ... ... — New Soldiers	62	
Recruited in India ... ... — Time-expired men	162	
Received from England, landed after 1st January—Recruits	1,351	
„ „ „ „ „ Invalids returned	116	
Deserters rejoined	18	
Additions, the sources of which are not specified	34	
Total Additions of the year		3,326

Loss of the Army during the year.

Transfers given to other Regiments and Batteries	954	
Time-expired men who have left the Army	2,287	
Men who have purchased their discharge	201	
Invalided to Europe ... ... — for Discharge	633	
Invalided to Europe ... ... — for Change of Climate...	1,076	
Dismissed by Sentence of Court-martial	14	
Sentenced to Penal Servitude	2	
Deserted	31	
Died at Head-Quarters and on Detachment	802	
Died absent from their Regiments... — at Convalescent Depôts	40	
Died absent from their Regiments... — in other Hospitals	76	
Causes of decrease not stated	17	
Total Loss of the year		6,133

Strength of the Army at the close of the year, including all men borne on the Roll who are in India. 37,498

This Table is a compilation from Regimental Statements. It refers to Regiments and Batteries which have served throughout the year in the Presidency. Regiments which arrived from Europe towards the end of 1865 are not included, while those which have proceeded to England are reckoned as at the date of their departure; hence the number stated as remaining at the close of the year, cannot be regarded as strictly accurate.

ABSTRACT of the Returns showing the ADMISSIONS, DEATHS, and INVALIDING of each REGIMENT. 1.—*REGIMENTS of BENGAL PROPER, BEHAR, BENARES, OUDE, and CAWNPORE.*

REGIMENTS AND THEIR STATIONS.	Arrived in Bengal.	Average Strength during 1865.	Admission rate of 1865, per cent. of Average Strength.	Loss per 1000. By Death.	Loss per 1000. By Invaliding.	Total Admissions and Loss of the year by Deaths and Invaliding.	Causes of Admissions into Hospital, of Deaths in and out of Hospital, and of the Invaliding of 1865. Cholera.	Small-pox.	Intermittent Fever.	Remittent & Continued Fever.	Dysentery.	Diarrhœa.	Erysipelas and Phagedæna.	Ophthalmia.	Rheumatism and Rheumatic Affections.	Primary Venereal Affections.	Secondary Venereal Affections.	Scurvy.	Anæmia and Debility.	Phthisis Pulmonalis & Hæmoptysis.	Apoplexy, Epilepsy, and Brain Affections.	Neuralgic Affections.	Drunkenness.	Delirium Tremens.	Heart Disease and Aneurism.	Tonsilitis, Bronchitis, and Asthma.	Pleurisy and Pneumonia.	Spleen Disease.	Hepatitis.	Functional Derangements of the Digestive System.	Diseases of the Urinary System.	Diseases of the Generative System.	Abscess and Ulcer.	Injuries and Accidents.	Punished.	All other Causes.
Artillery of Lower Bengal	.....	397	203	37·78	15·34	Admitted 806	1	...	169	48	29	53	...	5	46	117	16	...	17	2	3	19	8	4	1	14	1	...	23	68	4	9	48	77	1	23
						Died 15	1	...	...	5	12	2	...	...	1	...	...	...	1	1	1	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...
						Invalided 18	...	...	2	...	1	...	...	...	...	...	...	...	3	3	1	...	...	...	...	1	1	...	...	2	...	...	...	1	...	1
Artillery of Bhootan Force	.....	145	237	75·86	110·34	Admitted 343	5	...	93	37	49	45	...	5	19	14	...	...	2	1	..	...	...	...	...	18	...	5	13	...	...	...	10	8	...	19
						Died 11	3	...	...	3	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...
						Invalided 16	...	...	...	...	3	1	...	...	1	...	...	...	1	...	...	...	...	...	...	1	...	2	...	...	...	...	...	2	...	4
Artillery of Behar, Oude, and Cawnpore		1605	158	24·30	55·45	Admitted 2530	9	5	391	110	79	140	3	36	123	462	100	...	46	13	15	47	22	3	18	74	21	13	128	87	11	30	259	216	...	69
						Died 39	5	...	...	4	6	...	...	...	...	...	1	...	3	1	1	...	...	1	...	...	1	1	5	...	...	...	3	...	2
						Invalided 89	...	...	2	...	2	...	...	...	...	13	...	19	4	1	2	...	...	...	7	1	...	...	19	...	...	...	1	2	...	8
H. M.'s 54th Regiment, Fort William ...	Jan. 1858	735	168	13·61	47·62	Admitted 1236	1	...	179	47	31	90	1	32	98	194	31	...	15	5	9	39	14	3	8	98	3	3	20	108	10	25	63	83	...	23
						Died 10	1	...	1	2	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...
						Invalided 35	...	...	2	...	1	1	...	1	4	...	1	...	7	4	1	...	...	...	1	2	...	...	3	2	...	2	...	...	...	3
,, 55th ,, Dum-Dum ...	Mar. 1864	988	194	58·70	47·57	Admitted 1915	24	3	278	499	149	202	...	31	46	104	23	...	36	21	27	60	19	6	11	54	8	3	38	56	6	16	98	64	...	33
						Died 58	18	1	1	7	10	2	...	...	...	...	...	...	3	7	...	...	...	...	1	...	2	...	3	...	1	...	...	2	...	...
						Invalided 47	...	...	...	...	12	2	...	...	...	...	1	...	3	3	...	2	...	...	5	1	...	1	4	...	...	1	...	3	...	3
,, 27th ,, Hazareebangh ..	Oct. 1854	877	162	21·66	69·56	Admitted 1419	1	1	309	18	39	99	...	29	173	200	38	...	10	4	4	26	18	5	3	68	5	8	70	77	5	18	85	87	1	18
						Died 19	1	...	2	2	8	...	...	...	...	...	1	...	...	2	...	...	...	1	...	...	...	1	1	...	...	...	...	...	...	...
						Invalided 61	...	...	4	...	2	2	...	2	19	...	4	...	1	3	...	1	...	...	...	5	...	...	12	...	...	1	2	...	...	1
,, 1-20th ,, Dinapore ...	Nov. 1857	977	143	12·28	28·66	Admitted 1398	2	3	486	92	76	57	1	44	60	235	6	...	8	5	8	14	3	...	2	61	5	7	48	50	4	16	79	39	...	14
						Died 12	1	...	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	...	3	...	...	...	...	...	...	...
						Invalided 28	...	...	...	...	5	...	...	...	...	...	...	...	5	1	2	...	...	...	...	3	...	...	2	...	1	...	...	...	...	1
,, 58th ,, Benares ...	Nov. 1864	773	252	55·63	42·69	Admitted 1945	11	...	612	174	50	202	...	35	60	335	17	1	12	10	18	32	2	...	12	70	4	2	46	46	2	9	114	48	2	19
						Died 43	9	...	4	9	3	1	...	...	...	...	...	...	...	3	8	...	...	...	...	1	1	...	2	...	...	...	...	2	...	...
						Invalided 33	...	...	1	...	3	5	...	...	3	...	1	...	1	1	1	...	...	...	...	4	...	...	4	...	...	...	4	...	...	5
,, 7th D. Guards, Benares ...	Jan. 1858	325	122	24·62	51·28	Admitted 396	...	5	32	56	10	10	...	5	40	110	22	...	...	1	2	1	1	...	2	4	5	...	28	4	1	8	13	32	...	4
						Died 8	...	...	...	1	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	3	...	...	...	...	1	...	...
						Invalided †26	...	...	...	...	1	...	...	...	6	...	7	...	1	1	...	...	...	...	1	...	...	...	6	...	...	...	...	...	...	3
,, 1-11th Regiment, Fyzabad ...	Oct. 1864	838	151	64·44	39·38	Admitted 1265	13	4	4	520	41	63	...	28	23	218	14	...	5	33	13	7	3	19	23	3	...	23	26	3	6	106	49	4	14
						Died 54	11	...	...	7	3	2	...	...	...	...	...	...	2	20	...	1	...	1	...	1	...	1	4	...	...	...	1	1	...	...
						Invalided 33	...	...	...	...	2	...	...	...	4	...	...	...	3	...	...	...	...	11	...	...	...	7	...	1	...	...	...	...	5
,, 2-12th Wing, Rae Bareilly ...	,, ,,	386	110	20·73	15·35	Admitted 424	...	...	58	96	1	12	1	6	12	69	6	...	2	5	8	4	4	...	...	30	...	...	16	7	3	7	45	22	1	9
						Died 8	...	...	..	...	...	...	...	...	...	...	...	...	...	1	4	...	...	...	...	1	...	...	2	...	...	...	...	...	...	...
						Invalided 12	...	...	...	...	...	...	...	...	...	...	...	...	3	1	...	1	...	...	...	2	...	...	4	...	...	...	...	...	...	1
,, 2-12th ,, Seetapore ...	,, ,,	452	161	24·34		Admitted 727	...	1	7	182	35	52	...	16	24	196	17	...	1	13	5	8	4	1	3	32	1	...	23	17	2	18	43	21	1	4
						Died 11	...	...	...	3	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	2	...	...	...	1	...	...	...
						Invalided 26	...	...	...	1	2	1	...	...	4	1	...	...	3	2	1	...	...	...	1	1	...	...	6	...	...	...	1	...	...	2
,, 46th ,, Lucknow ...	May 1859	838	105	19·09	29·83	Admitted 882	10	1	47	63	15	78	...	25	12	238	27	1	4	4	5	14	17	5	7	47	2	2	56	24	4	15	77	68	...	14
						Died 16	8	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	2	...	...	...	1	...	...	...
						Invalided 25	...	...	...	...	...	...	...	1	...	...	4	...	10	1	2	...	...	...	1	2	...	...	3	1	...	...	...	...	...	...
,, 5th Lancers, Lucknow ...	Jan. 1864	483	114	39·34	26·92	Admitted 551	3	8	187	16	19	14	1	19	33	35	3	1	19	...	2	4	1	4	6	21	...	...	26	25	...	9	55	27	..	13
						Died 19	3	1	1	4	...	...	...	...	...	...	...	1	1	1	1	...	...	...	1	...	...	...	3	1	...	...	...	1	...	...
						Invalided 13	...	...	...	...	1	...	...	...	...	2	...	2	5	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	1
,, 88th Regiment, Cawnpore and Futtehgurh	Nov. 1857	842	130	22·57	45·13	Admitted 1095	2	1	347	138	17	51	3	12	53	123	35	...	1	16	2	15	8	3	5	28	...	1	30	50	5	16	47	60	1	25
						Died 19	2	...	1	5	1	1	...	...	...	...	...	...	...	3	...	...	1	...	1	1	...	...	1	...	...	...	...	1	...	...
						Invalided 38	...	...	2	...	1	...	...	...	...	8	...	5	6	7	...	...	...	...	2	...	...	...	3	2	...	...	...	...	...	2
,, 7th D. Guards, Cawnpore ...	.....	182	140	...	...	Admitted 254	1	...	60	3	4	9	1	3	3	63	21	...	3	1	...	...	2	...	...	6	1	1	13	8	...	5	19	24	...	3
						Died 2	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
						Invalided ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
,, 107th Regiment, Allahabad ...	*	888	125	31·53	30·41	Admitted 1113	14	...	99	207	35	99	...	19	71	166	7	4	20	4	20	16	20	5	5	30	4	12	39	39	5	10	75	73	1	14
						Died 28	9	...	...	...	3	1	...	...	...	...	...	...	...	1	...	...	...	1	1	2	...	...	...	3	...	...	...	...	3	...	1
						Invalided 27	...	...	...	1	2	...	...	1	6	...	1	...	3	3	2	...	...	...	1	...	...	...	1	1	1	...	1	1	...	2
Total	.....	11,731	156	31·71	44·92	Admitted 18,299	97	32	3358	2306	682	1276	11	350	896	2849	383	7	191	113	163	312	148	11	102	681	63	57	640	692	65	217	1236	998	12	318
						Died 372	72	2	11	55	42	11	...	...	...	2	1	6	17	59	...	2	1	...	11	8	7	2	35	2	1	...	3	16	...	3
						Invalided 527	...	...	13	2	38	12	...	8	74	1	39	...	69	41	12	7	...	...	38	18	...	3	79	6	3	4	9	9	...	12

* Late 3rd European Regiment.

† Including the detachment at Cawnpore.

The contents of the Regimental Tables must not be regarded as an accurate local record of sickness and mortality, such as is contained in the general tables showing the relation of disease to locality and to season. The Annual Regimental Returns of which they are an abstract, are supposed to include the medical history of every individual borne on the Rolls during the year, whether present with the Regiment or not.

EUROPEAN TROOPS, 1865.

XVI.

ABSTRACT of the Returns showing the ADMISSIONS, DEATHS, and INVALIDING of each REGIMENT. 2.—REGIMENTS of ROHILCUND, MEERUT, AGRA, and CENTRAL INDIA.

REGIMENTS AND THEIR STATIONS.	Arrived in Bengal.	Average Strength during 1865.	Admission-rate of 1865, per cent. of the Average Strength.	Loss Per 1000. By Death.	Loss Per 1000. By Invaliding.	Total Admissions and Loss of the year by Deaths and Invaliding.	Causes of Admissions into Hospital, of Deaths in and out of Hospital, and of the Invaliding of 1865. Cholera.	Small-pox.	Intermittent Fevers.	Remittent and Continued Fever.	Dysentery.	Diarrhœa.	Erysipelas and Phagedœna.	Eye Diseases.	Rheumatism and Rheumatic Affections.	Primary Venereal Affections.	Secondary Venereal Affections.	Scurvy.	Anæmia and Debility.	Phthisis Pulmonalis & Hæmoptysis.	Apoplexy, Epilepsy, and Brain Affections.	Neuralgic Affections.	Drunkenness.	Delirium Tremens.	Heart Disease and Aneurism.	Tonsilitis, Bronchitis, and Asthma.	Pleurisy and Pneumonia.	Spleen Disease.	Hepatitis.	Functional Derangements of the Digestive System.	Diseases of the Urinary System.	Diseases of the Generative System.	Abscess and Ulcer.	Injuries and Accidents.	Punished.	All other Causes.
Artillery of Rohilcund, Meerut, & Agra...	...	975	191	41·03	58·16	Admitted 1867	2	9	145	448	64	117	3	35	82	189	21	2	13	8	17	48	18	13	17	63	8	9	95	115	2	17	159	127	4	26
						Died 40	1	4	...	3	6	1	...	...	...	...	5	...	...	1	3	2	...	2	2	1	...	1	6	...	...	1	...	3	...	3
						Invalided 57	...	...	3	...	7	...	...	...	1	...	...	...	11	1	3	2	...	...	1	1	...	1	8	2	...	1	...	13	...	6
Artillery of Central India ...	...	952	213	49·37	70·38	Admitted 2027	21	3	619	96	48	139	3	29	90	269	55	...	33	8	15	21	12	5	22	77	3	13	58	101	19	19	152	137	...	21
						Died 47	14	...	2	7	4	1	...	...	...	...	...	...	3	2	5	...	...	2	2	1	...	1	6	...	...	...	...	1	...	1
						Invalided 67	...	...	2	...	7	...	...	...	7	...	6	...	7	1	1	2	...	...	2	3	...	3	7	...	...	...	1	4	...	7
H. M.'s 36th Regt., Wing, Shahjehanpore	Nov. 1863	505	184	9·90	38·46	Admitted 927	...	3	8	141	21	52	...	15	35	211	4	...	1	15	1	26	12	...	3	75	4	...	25	58	5	11	95	35	1	70
						Died 5	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
						Invalided 429	...	...	1	...	3	1	...	1	1	...	...	...	2	9	...	...	...	...	5	1	...	...	4	...	...	...	...	8	...	1
,, 36th ,, Wing, Moradabad ...		249	80	4·02		Admitted 198	...	...	1	49	13	16	...	8	13	21	6	...	1	1	1	1	2	...	4	9	...	...	20	11	...	...	22	8	...	...
						Died 1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
						Invalided ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
,, 77th ,, Bareilly ...	June 1853	782	93	14·07	29·41	Admitted 724	3	5	109	19	32	23	...	16	71	112	17	...	15	7	7	8	17	3	2	26	4	5	53	15	6	27	65	49	1	16
						Died 11	2	...	...	3	...	...	...	...	...	...	...	...	1	...	2	...	...	1	...	...	...	...	2	...	...	...	...	...	...	...	...
						Invalided 23	...	...	1	...	...	...	...	1	1	...	5	...	1	2	...	...	...	...	1	...	...	...	5	...	...	...	2	1	...	3
Sappers and Miners, Roorkee ...	...	47	...	...	...	Admitted 84	...	...	20	3	2	6	...	1	6	4	4	...	1	...	...	3	1	1	...	6	1	...	1	7	1	...	6	6	...	2
						Died 2	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
						Invalided 1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
H. M.'s 98th Regt., Wing, Roorkee ...	Jan. 1858	620	86	6·45	53·68	Admitted 534	...	...	44	45	16	20	2	22	60	164	19	...	2	6	1	16	2	1	3	38	1	5	13	26	1	...	41	37	...	16
						Died 4	...	...	...	1	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
						Invalided 251	...	...	1	...	2	...	...	...	21	...	1	...	7	6	...	...	...	...	2	...	...	...	3	...	...	...	1	1	...	6
,, 2nd Bat. Rifle Brigade, Meerut ...	...	882	170	19·27	60·09	Admitted 1495	...	5	167	264	16	47	3	28	121	261	16	...	39	5	23	23	11	2	16	83	1	13	70	96	7	9	114	43	1	65
						Died 17	...	2	...	4	...	2	...	...	...	...	...	...	1	...	3	...	...	...	...	...	...	1	3	...	...	...	...	...	...	...	1
						Invalided 53	...	...	1	...	1	...	...	1	3	...	6	...	18	2	3	1	...	...	3	1	...	...	4	...	...	...	1	...	...	6
,, 19th Hussars, Meerut ...	...	479	210	16·70	39·67	Admitted 1005	1	3	86	170	20	31	...	18	29	166	19	...	4	12	9	18	9	1	5	21	3	7	60	88	5	17	121	110	1	31
						Died 8	1	...	...	...	...	...	...	...	...	...	...	...	...	1	2	...	...	...	...	...	2	...	1	...	...	...	...	1	...	...	...
						Invalided 19	...	...	1	...	...	...	...	...	...	...	1	...	4	2	...	...	...	...	2	...	...	...	4	...	...	...	...	1	...	1
,, 98th Regt., Wing, Delhi ...	Jan. 1858	330	158	18·18	...	Admitted 521	...	1	7	197	10	18	...	5	28	122	2	...	...	3	2	2	1	...	...	21	...	1	10	15	...	2	31	40	...	3
						Died 6	...	...	...	3	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
						Invalided ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
,, 2nd Dragoon Guards, Muttra ...	Nov. 1857	413	130	19·37	38·74	Admitted 538	...	5	19	82	15	5	...	12	21	57	12	...	7	1	2	3	2	...	1	30	3	1	27	10	9	15	103	75	...	18
						Died 8	...	1	1	1	...	...	...	...	...	...	...	...	...	...	1	...	2	...	1	1	...	...	...	...	...	...	...	...	...	...	...
						Invalided 16	...	...	...	...	...	...	...	...	2	...	1	...	5	...	1	...	...	...	...	...	...	...	4	1	...	...	1	1	...	...
,, 1-23rd Regt., Agra ...	,, ,,	908	151	23·13	50·66	Admitted 1375	...	2	471	27	11	84	...	29	119	84	14	1	35	7	9	9	10	5	2	66	...	8	44	121	8	42	54	72	1	49
						Died 21	...	...	1	2	2	...	...	...	...	...	...	...	...	3	2	...	...	2	2	...	...	...	5	...	...	...	...	...	...	2
						Invalided 46	...	...	1	...	...	...	...	2	8	...	...	...	22	1	3	1	...	...	1	...	...	...	1	...	...	1	...	...	...	...	4
,, 34th ,, Morar ...	Oct. 1857	686	193	26·24	75·80	Admitted 1327	5	3	131	241	29	96	...	24	54	190	21	1	11	5	11	5	19	2	9	47	7	3	69	83	7	15	117	77	1	14
						Died 18	3	...	...	1	2	...	...	...	...	...	...	...	...	2	...	...	...	1	2	...	...	2	...	1	...	...	1	...	...	...	1
						Invalided 52	...	...	...	...	2	...	...	...	...	...	7	...	10	1	3	...	...	...	4	...	...	...	20	2	...	...	1	1	...	...	1
,, 104th ,, Jhansi & Gwalior ...	*	851	156	15·28	75·21	Admitted 1326	2	...	110	176	43	82	...	37	44	166	11	...	21	10	10	12	8	1	10	38	4	7	23	47	9	7	83	83	1	41
						Died 13	1	...	1	2	...	1	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	3	...	...	1	...	...	...	...
						Invalided 64	...	...	...	...	2	...	...	...	3	...	3	...	31	3	4	...	...	...	8	2	1	...	3	...	...	...	...	...	...	5
,, 97th ,, Saugor & Nowgong	Nov. 1857	927	191	37·76	72·28	Admitted 1766	23	1	318	286	35	186	...	26	56	166	62	...	40	2	4	16	7	1	10	47	10	26	67	42	13	37	151	84	...	47
						Died 35	11	...	...	3	2	3	...	...	...	...	...	...	3	1	1	...	...	1	...	...	1	1	8	...	...	...	...	...	...	...	1
						Invalided 67	...	...	1	...	3	1	...	1	...	...	13	...	29	2	2	...	...	...	3	...	...	1	6	...	...	...	1	2	...	...	3
,, 91st ,, Jubbulpore & Nagode	Feb. 1863†	813	176	31·99	25·83	Admitted 1433	8	...	623	13	27	132	...	20	67	170	57	3	9	3	10	27	18	3	20	36	19	7	34	37	5	10	56	41	...	17
						Died 26	8	...	...	2	1	...	...	...	...	...	...	...	...	4	...	...	...	...	4	...	...	1	4	...	...	...	...	2	...	...
						Invalided 21	...	...	...	...	1	...	...	...	1	...	1	...	...	...	1	3	...	...	2	...	...	1	3	1	1	...	...	...	...	...	6
		10,449	165	25·15	54·32	Admitted 17,147	65	40	3178	2248	402	1053	11	325	895	2022	340	7	262	93	122	238	149	44	124	683	59	105	669	872	97	228	1363	1015	11	427
						Died 262	41	7	6	32	20	8	...	...	...	...	...	...	5	14	30	...	2	9	13	1	7	3	10	...	1	...	2	5	...	10
						Invalided 666			13		27	2		8	16		19		118	40	24	8		8	11	1	6	72	7	1	1	9	13		19

XVII.

ABSTRACT of the Returns showing the ADMISSIONS, DEATHS, and INVALIDING of each REGIMENT. 3.—*REGIMENTS of the PUNJAB.*

REGIMENTS AND THEIR STATIONS.	Arrived in Bengal.	Average Strength during 1865.	Admission-rate of 1865, per cent. of the Average Strength.	Loss per 1000. By Death.	Loss per 1000. By Invaliding.	Total Admissions and Loss of the year by Deaths and Invaliding.		Causes of Admissions into Hospital, of Deaths in and out of Hospital, and of the Invaliding of 1865.																														
								Cholera.	Small-pox.	Intermittent Fevers.	Remittent & Continued Fevers.	Dysentery.	Diarrhœa.	Erysipelas and Phagedœna.	Eye Diseases.	Rheumatism and Rheumatic Affections.	Primary Venereal Affections.	Secondary Venereal Affections.	Scurvy.	Anæmia and Debility.	Phthisis Pulmonalis & Hæmoptysis.	Apoplexy, Epilepsy, and Brain Affections.	Neuralgic Affections.	Drunkenness.	Delirium Tremens.	Heart Disease and Aneurism.	Tonsilitis, Bronchitis, and Asthma.	Pleurisy and Pneumonia.	Spleen Disease.	Hepatitis.	Functional Derangements of the Digestive System.	Diseases of the Urinary System.	Diseases of the Generative System.	Abscess and Ulcer.	Injuries and Accidents.	Punished.	All other Causes.
Artillery of Peshawur	.....	508	281	13·78	45·28	Admitted	1430	...	1	899	7	25	74	...	9	47	51	1	...	5	3	8	13	3	...	2	16	1	3	20	23	1	11	76	93	1	32
						Died	7	...	...	1	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	1	...	...	...	...	2	...	...
						Invalided	23	...	...	4	...	2	1	...	1	4	...	...	...	1	2	...	...	...	...	1	...	1	1	...	...	...	...	2	...	1
Artillery of the other Stations of the Punjab	.....	1831	161	19·12	50·79	Admitted	2913	...	7	692	212	52	181	3	62	144	281	32	3	29	12	12	43	17	6	14	126	16	4	107	155	20	39	264	321	2	87
						Died	35	...	1	2	6	5	1	...	...	...	...	...	...	...	...	1	...	...	1	1	...	4	...	3	...	...	...	1	1	...	2
						Invalided	93	...	...	11	...	4	3	...	2	7	...	2	...	15	3	4	...	...	1	7	1	1	1	12	...	2	3	4	4	...	10
H. M.'s 21st Hussars, Umballa	.....	528	115	20·83	68·18	Admitted	609	...	1	36	45	1	19	...	18	53	49	17	...	19	4	7	22	7	1	13	20	9	...	9	38	3	7	111	87	...	13
						Died	11	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	2	...	1	...	...	1	...	...	...	3	...	2
						Invalided	36	...	...	...	...	...	...	...	...	4	...	1	...	18	1	3	...	...	...	2	...	...	...	1	...	...	...	...	...	...	6
,, 94th Regiment, Umballa	Jan. 1858	840	203	16·67	21·43	Admitted	1708	...	4	613	70	28	124	3	20	94	153	13	1	21	12	5	19	8	...	6	147	5	21	53	59	12	17	106	80	...	14
						Died	14	...	1	2	2	1	1	...	...	...	...	...	...	...	3	...	...	...	...	...	1	1	...	2	...	...	...	...	...	...	...
						Invalided	18	...	...	...	...	...	...	...	...	1	...	...	...	6	3	2	...	...	...	1	...	...	...	2	...	1	...	...	...	...	2
,, 1-19th Regiment, Jullundur ...	Nov. 1857	839	89	13 11	33·37	Admitted	746	2	...	199	12	20	32	1	12	48	54	14	...	24	2	9	2	3	...	2	49	4	...	64	51	...	13	62	58	1	8
						Died	11	1	...	1	1	3	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	3	...	...	...	...	1	...	...
						Invalided	28	...	...	...	...	5	...	...	3	5	...	...	...	10	...	2	...	...	...	...	1	...	...	1	...	...	...	...	...	...	1
,, 1-7th ,, Ferozepore ...	Nov. 1857	809	133	19·78	38·32	Admitted	1078	...	2	352	5	28	56	2	13	55	59	2	...	11	7	6	26	13	2	1	85	9	...	52	65	15	22	88	87	...	15
						Died	16	...	1	...	...	2	...	1	...	...	...	...	...	...	4	1	...	...	...	...	1	...	...	3	...	1	...	1	...	...	1
						Invalided	31	...	...	...	...	3	...	...	...	3	...	...	...	8	2	2	...	...	...	...	3	...	...	4	...	1	...	...	1	...	4
,, 7th Hussars, Sealkoto ...	Nov. 1857	574	84	8·71	45·30	Admitted	480	1	...	13	80	1	17	...	17	40	44	16	...	...	...	2	9	4	2	8	26	1	4	11	26	11	8	52	77	...	10
						Died	5	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	...
						Invalided	26	...	...	...	...	...	1	...	1	3	...	1	...	2	...	...	2	...	...	4	...	...	1	2	...	2	...	1	2	...	4
,, 93rd Regiment, Sealkote	Sept. 1857	771	116	11·67	20·75	Admitted	894	...	...	33	205	12	36	1	22	55	75	13	1	12	3	6	9	19	1	4	35	5	1	43	59	9	18	130	67	2	18
						Died	9	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	5	...	...	...	...	...	...	1
						Invalided	16	...	...	...	...	...	...	...	...	2	...	...	...	4	1	...	...	...	...	1	1	...	...	5	...	...	...	...	...	...	...
,, 82nd ,, Mean Meer ...	Sept. 1857	882	95	35·15	38·55	Admitted	834	...	1	236	102	5	35	1	17	43	73	4	...	7	1	17	6	22	7	9	38	8	...	41	30	3	11	60	47	...	10
						Died	31	...	...	...	4	...	1	...	...	...	...	...	...	...	...	8	...	1	...	3	1	3	...	5	...	...	...	1	1	...	3
						Invalided	34	...	...	1	...	...	2	...	1	3	...	2	...	8	1	...	...	...	...	1	2	...	...	6	1	...	1	2	...	...	3
,, 35th ,, Mooltan and Dera Ismael Khan	Nov. 1854	796	91	35·18	50·25	Admitted	728	...	...	171	52	17	28	...	13	63	43	9	1	16	9	13	20	5	3	4	34	8	5	58	56	5	10	44	25	...	16
						Died	28	...	...	...	4	3	...	...	...	...	...	...	...	...	1	8	...	...	...	...	1	...	2	...	5	...	...	...	...	2	...	2
						Invalided	40	...	...	...	...	1	2	...	...	11	...	...	...	4	6	...	3	...	...	3	...	...	...	5	...	1	...	...	1	...	3
,, 42nd ,, Rawul Pindee ...	Nov. 1857	804	82	9·95	33·58	Admitted	656	1	...	32	120	23	26	1	21	18	87	7	...	4	9	3	25	8	6	2	44	11	...	19	51	2	8	62	55	...	11
						Died	8	1	...	...	...	1	1	...	...	...	...	...	...	...	1	2	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...
						Invalided	27	...	...	...	...	...	...	...	1	...	...	1	...	4	9	3	...	...	...	1	1	1	...	4	...	1	...	...	...	...	1
,, 79th ,, Rawul Pindee and Murree Hills *	Nov. 1857	840	121	13·10	33·33	Admitted	1014	...	...	123	7	22	39	1	27	86	149	53	5	4	4	2	19	12	5	23	57	17	8	58	66	7	13	46	129	...	32
						Died	11	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	1	...	3	2	1	...	...	...	...	...	...	1	...	1
						Invalided	23	...	...	...	...	...	...	...	1	8	...	...	...	3	3	1	...	...	...	4	...	...	...	5	...	1	...	...	1	...	1
,, 20th Hussars, Campbellpore ...	.....	520	151	25·00	55·77	Admitted	786	...	1	131	81	5	20	...	27	38	103	25	...	17	7	7	13	13	...	5	32	1	1	25	31	2	11	71	95	2	22
						Died	13	...	1	...	2	2	...	...	...	...	...	...	...	...	1	...	...	...	...	3	...	...	...	1	...	...	...	...	...	...	2
						Invalided	29	...	...	...	...	...	...	...	2	3	...	...	...	3	4	...	1	...	...	3	1	...	...	6	...	...	...	...	...	...	3
,, 3rd Bat. R. Brigade, Nowshera ...	Nov. 1857	869	154	19·56	34·52	Admitted	1342	...	...	422	306	17	48	...	15	39	91	24	6	18	2	29	7	14	1	3	68	4	18	39	34	5	8	49	58	...	17
						Died	17	...	...	...	2	2	1	...	...	...	...	...	...	...	1	1	7	...	1	...	1	...	...	1	...	...	...	...	...	...	...	...
						Invalided	30	...	...	5	...	2	...	...	2	2	...	2	...	1	...	1	...	...	...	3	1	...	2	7	...	...	...	1	...	...	1
,, 51st Regiment, Peshawur	May 1854	890	272	15·73	38·20	Admitted	2424	...	...	1526	21	26	48	...	35	40	250	36	1	9	9	9	13	4	3	4	49	4	4	93	47	7	14	70	83	2	17
						Died	11	...	...	...	1	...	1	...	...	...	...	...	...	...	2	5	...	1	1	...	...	...	...	2	...	...	...	...	...	...	...	1
						Invalided	34	...	...	2	...	...	...	...	1	7	...	2	...	...	3	...	...	...	...	3	...	...	...	11	...	1	...	...	...	...	3
,, 90th ,, Peshawur	July 1857	658	239	25·83	63·83	Admitted	1572	1	2	796	1	30	89	3	15	53	51	9	...	6	9	6	18	2	1	18	120	3	7	61	79	6	9	77	51	...	49
						Died	17	1	...	5	1	1	...	...	...	...	...	...	...	...	2	1	...	...	...	1	1	1	...	2	...	...	...	...	...	...	1
						Invalided	42	...	...	3	...	1	1	...	...	5	...	...	...	4	1	1	...	...	...	7	...	6	1	6	...	...	1	...	...	...	5
Total	.....	12,959	149	19·06	41·28	Admitted	19,244	5	19	6274	1326	312	872	16	343	916	1613	275	18	202	93	141	264	154	38	118	946	106	76	753	870	108	219	1368	1118	10	371
						Died	247	4	4	11	24	23	6	1	...	...	...	...	1	2	19	10	...	4	2	18	6	13	...	35	...	2	...	4	12	...	16
						Invalided	535	...	...	26	...	18	10	...	15	68	...	11	...	90	38	20	6	...	...	41	11	8	6	78	2	13	5	9	12	...	48

* This Regiment might have been included among those stationed in the Hills during the year. A body of 650 men was employed as a working party in the Murree Hills from April to October, a depôt of 140 men only being left behind at Rawul Pindee during these months.

EUROPEAN TROOPS, 1865.

XVIII.

ABSTRACT of the Returns showing the ADMISSIONS, DEATHS, and INVALIDING of each REGIMENT.

4.—REGIMENTS CANTONED DURING THE YEAR AT THE HILL STATIONS.

REGIMENTS, DEPOTS, AND HOSPITALS.	Average Strength during 1865.	Admission-rate of 1865, per cent. of the Average Strength.	Loss per 1000. By Death.	Loss per 1000. By Invaliding.	Total Admissions and Loss of the year by Death and Invaliding.		Causes of Admissions into Hospital, of Deaths in and out of Hospital, and of the Invaliding of 1865. Cholera.	Small-pox.	Intermittent Fever.	Remitten and Continued Fever.	Dysentery.	Diarrhœa.	Erysipelas & Phagedena.	Eye Diseases.	Rheumatism and Rheumatic affections.	Primary Venereal Affections.	Secondary Venereal Affections.	Scurvy.	Anœmia and Debility.	Phthisis Pulmonalis and Hæmoptysis.	Apoplexy, Epilepsy, and Brain Affections.	Neuralgic Affections.	Drunkenness.	Delirium Tremens.	Heart Disease & Aneurism.	Tonsilitis, Bronchitis, and Asthma.	Pleurisy and Pneumonia.	Spleen Disease.	Hepatitis.	Functional Derangements of the Digestive System.	Diseases of the Urinary System.	Disease of the Generative System.	Abscess and Ulcer.	Injuries and Accidents.	Punished.	All other Causes.
H. M.'s 80th Regiment, Darjeeling ...	877	121	14·82	38·77	Admitted	1063	2	...	149	85	27	115	...	12	70	138	44	...	11	...	4	35	11	...	11	49	13	5	63	41	6	22	58	67	...	25
					Died	13	1	...	1	...	2	4	...	...	...	...	1	...	...	...	...	...	...	...	1	1	...	...	1	...	...	...	...	...	...	1
					Invalided	34	...	...	4	...	1	2	...	...	7	...	1	...	11	...	1	...	...	...	2	3	...	...	1	...	...	...	...	...	...	1
,, 38th ,, Subathoo ...	661	162	6·05	57·49	Admitted	1063	...	4	251	6	22	50	...	72	56	121	9	...	8	5	2	7	1	...	8	42	1	3	39	29	2	28	204†	78	1	19
					Died	4	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...
					Invalided	38	...	...	1	...	...	...	...	6	8	...	2	...	5	1	...	...	...	...	6	1	...	...	2	...	1	...	3	...	...	2
,, 101st ,, Dugshaie ...	881	109	13·62	45·40	Admitted	962	1	1	125	4	26	177	2	43	65	102	30	6	13	20	9	35	...	2	4	53	16	4	39	41	4	11	34	70	...	25
					Died	12	...	...	...	...	2	...	...	...	...	...	...	...	...	2	1	...	...	...	...	1	...	...	...	...	...	...	...	...	...	4
					Invalided	40	...	...	1	...	...	3	...	7	4	...	3	...	3	5	4	1	...	...	4	...	...	...	3	...	...	...	...	...	...	2
5. CONVALESCENT DEPOTS.																																						
Parasnath (7 months)	28	...	.....	.....	Admitted	37	...	...	8	2	2	4	...	2	3	2	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	2	...	...	10
					Died		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
					Invalided		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Darjeeling (10 months)	39	...	.....	128·21	Admitted	104	...	...	20	...	4	2	...	3	18	7	11	...	2	...	...	3	1	...	...	5	4	...	4	3	4	...	4	5	...	4
					Died		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
					Invalided	5	...	...	...	...	...	...	...	...	1	...	...	...	2	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Nynee Tal (6 months)	307	97	13·03	136·81	Admitted	297	...	1	43	14	4	37	...	6	24	22	21	...	13	...	2	5	...	...	3	16	2	1	21	19	2	7	15	4	...	15
					Died	4	...	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...
					Invalided	42	...	...	...	...	1	...	...	1	5	...	7	...	12	...	1	1	...	...	3	...	...	...	4	3	...	...	...	...	...	...	4
Landour (7 months)	208	182	43·27	216·35	Admitted	378	...	...	12	3	5	14	3	16	39	9	27	3	22	4	6	4	3	1	7	30	2	12	14	25	1	9	29	11	...	7
					Died	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	1	...	...	3	...	...	...	1	...	...	3
					Invalided	45	...	...	1	...	...	...	...	7	...	...	2	...	17	1	1	...	...	...	1	...	...	...	5	3	...	...	1	1	...	2
Kussowlie (6 months)	606	96	20·70	108·91	Admitted	528	2	...	63	38	14	39	...	7	76	52	23	1	20	9	24	9	...	1	4	23	2	4	48	17	5	22	32	42	...	5
					Died	18	2	...	...	1	...	1	...	...	...	...	...	...	...	4	1	...	...	...	...	...	1	...	5	...	...	...	...	1	...	2
					Invalided	66	...	...	3	...	2	...	...	...	4	...	7	...	29	...	15	...	...	...	...	...	...	...	1	...	...	...	4	...	...	1
Dhurmsalla (7 months)	121	...	.....	.....	Admitted	137	...	...	17	4	8	9	...	2	34	6	2	...	1	1	3	6	1	1	...	4	1	...	14	3	1	3	2	6	...	1
					Died		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
					Invalided		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nundcote (5 months)	130	76	....	138·46	Admitted	99	...	...	46	...	...	4	1	6	6	4	3	...	...	...	...	1	...	...	...	7	1	...	7	1	...	...	9	3	...	...
					Died	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
					Invalided	18	...	...	3	...	...	1	...	...	6	...	...	...	...	1	...	...	...	...	...	2	...	...	2	1	...	...	1	...	...	1
Murree (6 months)	376	125	15·96	162·23	Admitted	470	...	...	176	16	10	17	...	12	10	23	11	...	5	...	8	15	...	...	8	16	2	12	59	15	4	7	16	12	1	15
					Died	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	1
					Invalided	61	...	...	5	...	3	...	...	4	3	...	3	...	5	...	1	6	...	...	6	1	...	1	17	1	1	...	...	1	...	...	2
6. GENERAL AND GARRISON HOSPITALS, AND DEPOTS.																																						
Kidderpore Hospital	...	...	.....	.....	Admitted	441	2	..	35	16	38	40	...	4	36	35	23	...	16	16	12	4	8	4	9	20	3	...	32	13	1	9	22	17	...	29
					Died	22	1	..	1	1	4	2	..	..	..	..	1	..	1	1	1	..	..	..	..	..	2	..	4	..	..	..	..	..	2	..	..
					Invalided	19	..	..	1	..	..	..	..	..	2	..	..	..	3	3	2	..	..	..	1	3	...	..	..	..	..	..	..	..	2	..	..	..
Chinsurah Depôt	...	...	.....	.....	Admitted	198	...	2	12	20	7	11	...	6	1	30	9	...	1	...	3	2	...	...	...	19	...	...	2	12	...	2	42	16	...	1
					Died	1	...	..	1	..	..	...	..	..	...	..	...	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
					Invalided	2	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Allahabad General Hospital (January to July)	...	...	.....	.....	Admitted	162	1	...	10	56	3	9	...	3	7	10	...	...	...	...	4	...	...	...	...	1	1	1	7	1	...	...	12	11	...	25
					Died	3	.	.	.	.	1	1	.	.	.	.	.	.	.	.	.	.	.	.	.	.	1	.	.	1	.	.	.	.	.	.	.
					Invalided		.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Chunar Invalid Garrison	78	...	.....	.....	Admitted	57	...	...	8	1	...	1	...	...	4	2	1	1	5	...	1	...	16	...	...	2	...	...	1	2	1	...	5	4	...	...
					Died	3	.	.	.	.	.	1	.	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	1	.	.	.	.	.	.	.	.
					Invalided		..	.	..	...	...	.	.	.	.	.	.	.	.	..	.	.	.	.	...	.	.	.	.	.	.	.	.	.	...	.	.
Bengal Presidency * *	37,528	154	24·25	46·36	Admitted	57,783	170	96	13,335	5975	1471	3543	40	1145	2898	6845	1081	38	687	324	441	891	463	128	367	2454	258	250	2203	2545	282	725	4263	3646	34	1185
					Died	910	118	13	29	113	89	91	1	11	27	1	10	2	25	11	69	2	8	15	14	17	8	5	112	6	6	11	5	1	1	14
					Invalided	1710			7		84	29		14	27	1	10		25	11	69	2	8	15	14	17	8	5	112	6	6	11	5	1	1	14

* * Excluding [illegible] are not included, and if

EUROPEAN TROOPS, 1865.

XIX.

ADMISSIONS and DEATHS of the WOMEN and CHILDREN of EUROPEAN REGIMENTS.

WOMEN.

Average Strength 2738.
Admitted during the year, 3386. Per cent. of Strength 123·67.
Died ... ... 115. Per 1000 of Strength 42·00.

CAUSES OF ADMISSIONS AND DEATHS.	Admitted.	Died.	Admitted per cent. of Strength.	Died per 1000 of Strength.
Variola ...	11	2	·40	·73
Morbilli ...	1	...		
Tonsillitis ...	18	...		
Febris, Intermittens ...	670	8	24·47	9·13
,, Remittens ...	111	5	14·94	
,, Continua ...	298	12		
Ophthalmia ...	171	...	6·25	
Erysipelas ...	5	...		
Dysenteria ...	132	22	4·82	12·05
Diarrhœa ...	257	11	9·38	
Cholera ...	21	16	·77	5·84
Rheumatismus ...	48	1	1·75	
Syphilis Secundaria ...	8	...		
Gonorrhœa ...	1	...		
Scorbutus ...	1	...		
Ebriositas ...	9	...		
Scabies ...	5	...		
Vermes ...	4	...		
,, Tœnia ...	11	...		
Anœmia ...	101	...		
Anasarca ...	4	1		
Phthisis Pulmonalis ...	18	4	·66	1·46
Hæmoptysis ...	2	...		
Apoplexia ...	8	7	·29	2·56
Epilepsia ...	9	1		
Paralysis ...	2	...		
Chorea ...	3	...		
Mania ...	2	...		
Delirium Tremens ...	1	...		
Hysteria ...	14	...		
Cephalœa ...	5	...		
Neuralgia ...	5	...		
Otitis ...	4	...		
Morbus Cordis ...	3	2	·11	.73
Palpitatio ...	3	...		
Epistaxis ...	1	...		
Bronchitis ...	56	2	2·26	·73
Pleuritis ...	3	...		
Pneumonia ...	2	...		
Asthma ...	1	...		
Gastritis ...	2	1		
Enteritis ...	2	...		
Peritonitis ...	1	...	10·15	
Obstipatio ...	8	...		
Dyspepsia ...	184	1		
Colica ...	67	...		
Hæmorrhois ...	19	...		
Splenitis ...	4	...		
Hepatitis ...	69	6	2·52	2·19
Icterus ...	3	...		
Ascites ...	1	...		
Nephritis ...	3	...		
Diuresis ...	2	...		
Leucorrhœa ...	7	...	2·78	
Paramenia ...	29	2		
Menorrhagia ...	28	...		
Ovaritis ...	2	...		
Hysteritis ...	3	...		
Prolapsus Uteri ...	2	...		
Tumor (Uterine) ...	5	...		
Synovitis ...	2	...		
Skin Disease ...	6	...		
Abscess ...	44	...	2·05	
Ulcer ...	12	...		
Child-birth ...	635	7	25·05	2·56
Abortion ...	51	...		
Debility ...	119	3	*8·04	1·09
Injuries ...	47	1	1·72	
Ratio for all Causes not specially calculated ...	...	...	5·26	2·93
	3386	115	123·67	42·00

CHILDREN.

Average Strength 4221.
Admitted during the year, 3198. Per cent. of Strength 75·76.
Died ... ... 351. Per 1000 of Strength 83·15.

CAUSES OF ADMISSIONS AND DEATHS.	Admitted.	Died.	Admitted per cent. of Streugth.	Died per 1000 of Strength.
Variola ...	15	3	·35	·71
Varicella ...	8	...		
Morbilli ...	27	2	·64	·48
Scarlatina ...	1	...		
Tonsillitis ...	20	...		
Diphtheria ...	7	1	1·14	1·42
Parotitis ...	3	...		
Cynanche trachealis ...	18	5		
Pertussis ...	25	4	·59	·94
Febris, Intermittens ...	606	21	22·58	14·68
,, Remittens ...	107	24		
,, Continua ...	240	17		
Ophthalmia ...	544	...	12·89	
Erysipelas ...	2	...		
Dysenteria ...	133	24	15·47	21·79
Diarrhœa ...	520	68		
Cholera ...	23	16	·54	3·79
Rheumatismus ...	6	...		
Elephantiasis ...	1	...		
Scorbutus ...	2	...		
Aphtha ...	4	...		
Porrigo ...	1	...		
Scabies ...	9	...		
Vermes ...	8	...		
,, Tœnia ...	8	...		
Anœmia ...	75	7		
Scrofula ...	13	2		
Tabes mesenterica ...	5	6		
Morbus coxæ ...	6	1	·97	4·26
Phthisis Pulmonalis ...	7	1		
Meningitis ...	1	1		
Hydrocephalus ...	9	7		
Apoplexia ...	3	2	·07	·48
Convulsio ...	52	45	1·23	10·66
Paralysis ...	2	...		
Chorea ...	1	...		
Hysteria ...	1	...		
Cephalœa ...	1	...		
Otitis ...	6	...		
Morbus cordis ...	1	...		
Hæmorrhagia ...	1	1		
Epistaxis ...	1	...		
Laryngitis ...	1	...		
Bronchitis ...	160	11	4·12	4·50
Pleuritis ...	1	...		
Pneumonia ...	12	8		
Gastritis ...	2	...		
Enteritis ...	2	2		
Peritonitis ...	2	1		
Obstipatio ...	2	...		
Dyspepsia ...	20	...		
Colica ...	9	1		
Splenitis ...	7	...	·17	
Hepatitis ...	2	1	·05	·24
Icterus ...	3	...		
Orchitis ...	3	...		
Phymosis ...	1	...		
Euuresis ...	2	...		
Leucorrhœa ...	2	...		
Skin Diseases ...	9	...		
Abscess ...	52	1	1·66	
Ulcer ...	18	...		
Bronchocele ...	1	...		
Deutition ...	149	36	3·53	8·53
Amenorrhœa ...	1	...		
Spina bifida ...	1	1		
Atrophy and Debility ...	166	27	5·71	8·06
Injuries ...	46	2	1·09	
Poisoning ...	1	1		
Cause not specified ...	...	1		
Ratio for all causes not specially calculated ...	...	...	2·96	2·61
	3198	351	75·76	83·15

* Including Anœmia.

DISTRIBUTION of the EUROPEAN ARMY of the BENGAL PRESIDENCY on 30th June 1865.

XX.

STRENGTH OF THE ARMY ON 30TH JUNE, 1865, 36,839.

ARTILLERY.	STATION.	STRENGTH.
Artillery Regimental Band	Meerut	33
A. Royal Horse Brigade D. Battery	Meerut	137
E. ,,	Umballa	135
C. Royal Horse Brigade C. Battery	Benares	144
D. ,,	Morar	134
E. ,,	Rawulpindee	144
F. ,,	Lucknow	139
F. Royal Horse Brigade A. Battery	Umballa	134
B. ,,	Peshawur	123
C. ,,	Meerut	140
D. ,,	Peshawur	124
E. ,,	Meeau Meer	123
F. ,,	Sealkote	124
11th Brigade Royal Artillery A. Battery	Fyzabad	136
B. ,,	Lucknow	128
C. ,,	Seetapore	144
D. ,,	Meerut	126
E. ,,	Morar	149
F. ,,	Bareilly	133
G. ,,	Cawnpore	136
16th Brigade Royal Artillery A. Battery	Jubbulpore	137
B. ,,	Saugor	142
C. ,,	Barrackpore	153
D. ,,	Barrackpore	148
E. ,,	Allahabad	135
F. ,,	Dinapore	144
G. ,,	Hazareebaugh	149
19th Brigade Royal Artillery A. Battery	Ferozepore	150
B. ,,	Rawulpindee	144
C. ,,	Agra	132
D. ,,	Mooltan	137
E. ,,	Jullundur	137
F. ,,	Meean Meer	134
G. ,,	Peshawur	129
22nd Brigade Royal Artillery A. Battery	Meerut	148
B. ,,	Jhansi	133
3 ,,	Lucknow	70
4 ,,	Meerut	61
5 ,,	Morar	82
6 ,,	Fort Lahore	81
7 ,,	Darjeeling	82
24th Brigade Royal Artillery 1 Battery	Mooltan	60
2 ,,	Meean Meer	65
3 ,,	Peshawur	65
4 ,,	Allahabad	73
5 ,,	Morar	74
6 ,,	Govindghur	65
25th Brigade Royal Artillery 1 Battery	Saugor	53
2 ,,	Delhi	58
3 ,,	Fort William	62
4 ,,	Attock	55
5 ,,	Bhootan Field Force	54
6 ,,	Bhootan Field Force	51
Armstrong M. T. Battery	Bhootan Field Force	43
Garrison Battery No. 1	Lucknow	56
Sappers and Miners	Roorkee	38
CAVALRY.		
2nd Dragoon Guards	Muttra	386
5th Lancers	Lucknow	486
7th Dragoon Guards	Benares	277
,,	Cawnpore	194
7th Hussars	Sealkote	523
19th ,,	Meerut	436
20th ,,	Campbellpore	341
,,	Rawulpindee	137
21st ,,	Umballa	468

INFANTRY.	STATION.	STRENGTH.
7th Fusiliers 1st Battalion	Ferozepore	695
11th Regiment 1st ,,	Fyzabad	816
12th ,, 2nd ,,	Seetapore	443
,, ,, ,, ,,	Rae Bareilly	385
19th ,, 1st ,,	Jullundur	634
,, ,, ,, ,,	Phillour	69
,, ,, ,, ,,	Kangra	68
20th ,, ,, ,,	Dinapore	942
23rd ,, ,, ,,	Agra	814
27th ,,	Hazareebaugh	711
,, ,,	Berhampore	145
34th ,,	Morar	680
35th ,,	Mooltan	666
,, ,,	Dera Ismael Khan	100
36th ,,	Shahjehanpore	457
,, ,,	Moradabad	250
38th ,,	Subathoo	612
42nd ,,	Rawulpindee	782
46th ,,	Lucknow	774
51st ,,	Peshawur	711
54th ,,	Fort William	709
55th ,,	Dum-Dum	815
,, ,,	Lucknow	145
58th ,,	Benares	532
,, ,,	Azimghur	204
77th ,,	Bareilly	746
79th ,,	Rawulpindee	136
,, ,,	Murree Hills	647
80th ,,	Darjeeling	849
82nd ,,	Meean Meer	717
,, ,,	Fort Lahore	83
88th ,,	Cawnpore	568
,, ,,	Futtehghur	216
90th ,,	Peshawur	526
91st ,,	Jubbulpore	574
,, ,,	Nagode	176
93rd ,,	Sealkote	612
,, ,,	Umritsur	86
94th ,,	Umballa	764
97th ,,	Saugor	661
,, ,,	Nowgong	208
98th ,,	Roorkee	508
,, ,,	Delhi	310
101st ,,	Dugshaie	903
104th ,,	Jhansi	473
,, ,,	Fort Gwalior	215
,, ,,	Seepree	153
107th ,,	Allahabad	811
2nd Battalion Rifle Brigade	Meerut	750
3rd ,, ,,	Nowshera	610
,, ,, ,,	Attock	102
CONVALESCENT DEPOTS.		
,,	Darjeeling	46
,,	Parasnath	29
,,	Nyuee Tal	314
,,	Landour	216
,,	Kussowlie	609
,,	Dhurmsalla	127
,,	Nundcote	133
,,	Murree	335
GENERAL HOSPITALS.		
,,	Allahabad	31
,,	Kidderpore	78
,,	Chinsurah Depôt	24

2. NATIVE TROOPS, 1865.

2. NATIVE TROOPS, 1865.

I.

TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in the BENGAL PRESIDENCY during the year 1865, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Average Strength.	Number of Deaths.	Died per 1000 of Average Strength.	Causes of Deaths in Hospital.																		Died out of Hospital.
						Cholera.	Small-pox.	Intermittent Fever.	Remittent Fever.	Continued Fever.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	
January ...	35,093	1,363	3·88	37	...	1	1	7	4	...	1	...	1	5	2	...	6	2	...	1	1	2	...	3	...
February ...	34,595	1,216	3·51	34	...	8	4	4	...	...	1	...	3	1	...	...	6	...	1	1	...	1	1	3	...
March ...	32,641	1,203	3·68	27	...	5	1	5	1	...	...	...	4	4	...	1	2	1	...	...	...	1	2	...	...
April ...	31,108	1,272	4·09	44	...	6	...	7	8	...	...	...	1	5	2	1	8	1	...	...	...	1	1	3	...
May ...	30,330	1,172	3·86	44	...	15	2	12	1	...	...	...	2	3	1	...	1	...	3	1	...	...	...	3	...
June ...	31,206	1,434	4·59	53	...	13	...	9	7	2	1	...	4	6	...	2	1	...	1	...	1	1	2	3	...
July ...	31,392	1,546	4·92	35	...	3	...	6	3	...	1	...	7	3	2	1	1	...	...	2	1	2	1	2	...
August ...	31,624	1,477	4·67	43	...	12	...	7	3	5	2	...	3	4	...	...	1	...	1	...	...	...	...	3	2
September..	31,630	1,598	5·05	29	...	9	...	6	1	2	...	...	1	...	...	...	1	2	2	...	...	1	1	3	...
October ...	32,484	1,873	5·77	52	...	5	...	16	2	1	...	...	9	5	2	...	2	...	1	...	...	...	2	6	1
November..	32,542	1,716	5·27	39	...	8	...	9	1	1	...	...	2	4	...	...	5	...	...	1	...	...	1	7	...
December...	30,899	1,393	4·51	36	...	6	1	9	2	...	...	...	3	4	...	...	3	...	1	...	...	...	1	6	...
						91	9	97	33	11	6	...	40	44	9	5	37	6	10	6	3	9	12	42	3
						Died per 1000 of the Average Strength.																			
For the year	32,129	1,439	4·48	473*	14·72	2·83	·28	4·38			·19	...	1·25	1·37	·28	·16	1·15	·19	·31	·19	·09	·28	·37	1·31	·09

CAUSES OF ADMISSIONS.	Number of Admissions into Hospital in each Month.												Total Admissions during the Year.	Admitted per cent. of Streugth.	Died per cent. of Admissions.
	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	2	22	8	14	30	27	14	21	12	14	12	7	183	·57	49·73
Small-pox ...	13	9	9	18	15	...	...	...	...	...	...	5	69	·21	13·04
Fever, Intermittent ...	1,367	831	879	1,418	1,693	1,891	1,727	2,134	2,294	4,642	3,057	1,575	23,508	73·17	
,, Remittent ...	21	29	17	67	91	86	13	35	29	28	19	15	450	1·40	·59
,, Continued ...	3	...	1	5	6	6	4	2	1	8	7	2	45	·14	
Apoplexy ...	2	1	...	1	1	1	...	2	1	2	1	...	12	·04	50·00
Dysentery ...	239	282	246	240	282	273	259	329	308	307	264	189	3,218	10·02	1·45
Diarrhœa ...	166	102	93	161	217	295	282	322	241	376	214	117	2,586	8·05	
Hepatitis ...	15	1	5	5	4	6	7	4	2	6	5	3	63	·20	14·29
Spleen Disease ...	16	20	14	14	19	19	13	20	9	14	21	26	205	·64	2·44
Respiratory Diseases ...	197	121	94	100	75	65	53	100	79	100	95	128	1,207	3·76	3·07
Phthisis Pulmonalis ...	...	2	...	1	6	4	3	...	2	2	3	5	28	·09	35·71
Dropsy ...	...	3	1	1	2	4	1	4	3	2	1	2	24	·08	25·00
Scurvy ...	1	...	4	3	2	5	4	4	6	5	2	6	42	·13	7·14
Rheumatism ...	271	199	148	154	149	156	150	142	143	185	135	155	1,987	6·18	
Venereal Diseases ...	168	122	166	123	162	113	135	137	120	165	125	106	1,642	5·11	
Eye Diseases ...	47	30	47	60	88	95	69	125	107	96	57	48	869	2·70	
Abscess and Ulcer ...	420	312	253	247	284	342	440	495	346	435	311	328	4,213	13·11	·44
Wounds and Accidents ...	440	268	338	285	300	277	269	321	295	415	320	270	3,798	11·82	
All other Causes ...	276	225	266	289	264	227	312	323	300	319	224	234	3,259	10·14	
	3,664	2,579	2,589	3,206	3,690	3,892	3,755	4,520	4,298	7,121	4,873	3,221	47,408		
	Admitted per cent. of the Average Strength in each Month.														
	10·44	7·45	7·93	10·36	12·17	12·47	11·96	14·29	13·59	21·92	14·98	10·42	147·56		

The Sickness and Mortality of the Bhootan Field Force is shown in a separate Statement; the Average Strength of this Force for the twelve months, added to that given in this Table, will represent the average number of the men of the Regular Native Army present with their regiments during the year.

* The deaths of men who died absent from their regiments, are not comprehended in this Statement. Excluding the men of the regiments which chiefly suffered in the Bhootan Dooars, upwards of 200 men of the Native Army are known to have died during the year in the hospitals of other regiments, and at their homes. Reckoning the number absent on furlough at 10 per cent., the actual death-rate of the year may be estimated at 19 per 1000.

NATIVE TROOPS, 1865.

II.

TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS of the BHOOTAN FIELD FORCE during the year 1865 and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Average Strength.	Number of Deaths.	Died per 1000 of Average Strength.	Causes of Deaths.															
						Cholera.	Fever, Intermittent.	Fever, Remittent and Continued.	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Diseases.	Respiratory Diseases.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Cause unknown.
January ...	3,997	250	6·25	12	...	...	2	1	1	2	...	...	...	1	...	...	...	...	...	5	...	...
February ...	4,365	225	5·16	10	...	1	...	...	...	1	1	...	...	...	...	1	...	...	...	6	...	...
March ...	7,205	350	4·86	28	...	4	3	1	...	5	1	...	...	...	...	...	...	...	3	10	...	1
April ...	6,918	703	10·16	67	...	37	6	5	1	3	1	1	...	...	...	...	...	...	3	10	...	...
May ...	6,129	1,075	17·54	77	...	33	6	5	...	15	4	...	1	1	...	1	...	...	...	2	2	7
June ...	5,066	1,098	21·67	79	...	22	10	4	...	17	8	...	1	1	...	1	3	1	1	...	...	1
July ...	4,682	902	19·27	46	...	5	12	4	...	13	4	...	1	1	...	...	...	2	1	2	...	1
August ...	4,426	995	22·48	39	...	1	13	2	...	9	4	...	...	2	...	...	...	7	...	...	...	1
September..	4,377	908	20·74	49	...	...	16	1	...	5	9	...	...	...	...	...	...	16	...	1	1	...
October ...	3,681	485	13·18	17	...	...	2	1	...	3	1	...	...	...	...	...	...	8	...	1	...	1
November..	4,423	313	7·07	37	...	10	3	1	...	5	5	1	...	4	...	...	...	6	...	...	2	...
December...	6,492	624	9·61	28	...	...	2	2	...	9	8	...	...	3	1	...	...	2	...	1	...	...
						113	75	27	2	87	46	2	3	13	1	3	3	42	8	33	5	12
						Died per 1000 of the Average Strength.																
For the year	5,084*	699	13·75	480	94·41	22·23	20·06		·39	26·16		·39	·59	2·56	·20	·59	·59	8·26	1·58	7·47	·98	2·36

CAUSES OF ADMISSIONS.	Number of Admissions into Hospital in each Month.												Total Admissions during the Year.	Admitted per cent. of Strength.	Died per cent. of Admissions.
	Jan.	Feb.	Mar.	April.	May.	June.	July.	Augt.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	...	...	...	56	67	36	5	1	4	...	20	2	191	3·76	59·16
Small-pox ...	...	...	...	1	...	...	...	...	...	...	...	...	1	·02	...
Fever, Intermittent ...	380	232	395	1379	2640	1551	874	1049	475	363	519	513	10,370	203·97	
,, Remittent ...	8	8	7	15	66	61	46	28	6	20	16	13	294	5·78	·96
,, Continued ...	...	...	...	...	3	...	...	...	...	6	2	...	11	·22	
Apoplexy ...	1	...	...	1	...	...	...	...	...	...	...	...	2	·04	...
Dysentery ...	171	110	257	389	297	241	139	139	55	111	155	457	3946	77·62	3·37
Diarrhœa ...	63	28	106	206	212	223	124	87	51	58	119	118			
Hepatitis ...	...	...	...	1	2	5	2	...	1	3	...	4	18	·35	11·11
Spleen Disease ...	...	4	1	3	5	27	13	4	7	3	5	3	75	1·48	4·00
Respiratory Diseases ...	20	11	34	27	19	13	17	36	13	21	55	85	351	6·90	3·70
Phthisis Pulmonalis ...	...	...	...	...	3	...	...	...	...	...	...	...	3	·06	100·00
Dropsy ...	...	...	...	1	4	2	2	2	1	...	...	...	12	·24	25·00
Scurvy ...	...	...	...	2	9	9	18	89	73	53	42	23	318	6·25	13·21
Rheumatism ...	37	41	51	36	56	31	28	127	57	109	36	53	665	13·08	
Venereal Diseases ...	15	8	32	14	11	9	7	8	10	11	12	18	155	3·05	
Eye Diseases ...	5	7	6	11	12	4	7	6	4	3	4	8	77	1·51	
Abscess and Ulcer ...	54	49	98	94	70	78	85	110	64	160	212	171	1245	24·49	1·61
Wounds and Accidents ...	69	75	144	214	73	61	59	67	60	83	88	79	1072	21·09	
All other Causes ...	49	46	78	74	88	68	58	64	44	40	68	85	762	14·99	
	872	652	1209	2524	3637	2419	1484	1817	925	1044	1353	1632	19,568		
	Admitted per cent. of the Average Strength in each Month.														
	21·31	14·94	16·78	36·49	59·34	47·75	31·70	41·05	21·13	28·36	30·56	30·14	384·90		

The Force lost by Death and Invaliding upwards of 2000 men. In addition to the deaths above recorded, 127 men, belonging to the regiments which chiefly suffered, died while at home on sick-leave during the year, or at the Stations to which their regiments were transferred after quitting the Force; and upwards of 1300 were sent away from time to time to their homes for change of climate.

* The Average Strength, 5084, is the average of the 10 months, January to October. The minimum, 3681, was reached in October, when upwards of 1300 men had been sent away sick; the addition of the Strength of the Invalids to the Minimum Strength gives a total closely approximating to the Average of the ten months. The increase of November and December was caused by the arrival of new regiments, by which the Force was supplemented, which had no experience of the special climate of the Dooars up to the close of the year.

NATIVE TROOPS, 1865.

III.

TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in BENGAL PROPER and in ASSAM during the year 1865, *and the prevalence of the principal Diseases in each Month of the Year.*

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Strength.	Number of Deaths.	Died per Cent. of Strength.	Causes of Deaths in Hospital.																		Died out of Hospital.
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anœmia.	Wounds and Accidents.	All other causes.	
January ...	5,895	299	5·07	10	...	1	...	2	...	...	...	...	1	2	...	...	2	...	...	...	...	1	...	1	...
February ...	4,699	246	5·24	7	...	4	...	...	...	...	...	...	1	...	...	...	1	...	...	1	...	...	...	...	...
March ...	4,959	269	5·42	12	...	5	...	2	...	...	...	...	3	1	...	1	...	...	...	...	...	...	...	...	...
April ...	4,976	280	5·62	12	...	6	...	...	1	...	...	...	...	2	...	1	2	...	...	...	...	...	...	...	...
May ...	5,271	331	6·28	17	...	7	...	6	...	...	...	...	1	1	...	...	...	...	1	1	...	...	...	...	...
June ...	5,721	532	9·30	25	...	5	...	3	5	...	1	...	3	6	...	...	...	...	...	...	1	...	...	1	...
July ...	5,598	636	11·36	14	...	...	...	3	3	...	...	...	3	3	...	...	...	...	...	1	...	...	...	1	...
August ...	5,620	527	9·38	17	...	2	...	2	1	4	1	...	2	3	...	...	...	...	...	...	...	...	...	2	...
September	5,502	493	8·96	9	...	3	...	2	...	1	...	...	...	...	...	...	...	1	1	...	...	...	...	1	...
October ...	4,865	365	7·50	13	...	4	...	2	...	...	...	...	2	2	1	...	...	...	1	...	...	...	...	1	...
November	4,423	321	7·26	11	...	4	...	1	...	...	...	...	1	2	...	...	1	...	...	1	...	...	...	1	...
December ...	3,766	280	7·44	13	...	6	...	...	1	...	...	...	1	4	...	...	...	...	...	...	...	...	...	1	...
						47	...	23	11	5	2	...	18	26	1	2	6	1	3	4	1	1	...	9	...
						Died per cent. of the Average Strength.																			
For the year	5,108	382	7·48	160	31·32	9·20	...	4·50	2·15	·98	·39	...	3·52	5·09	·20	·39	1·17	·20	·59	·78	·20	·20	...	1·76	...

Died at their Homes, and in the Hospitals of other Regiments 84; per 1000 of Strength, 15·25.

DISEASES.	Number of Admissions into Hospital in each Month.												Total Admissions during the Year.	Admitted per cent. of Strength.	Died per cent. of Admissions.
	Jan.	Feb.	March.	April.	May.	June.	July.	Augt.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	2	9	7	12	17	12	5	7	5	11	5	7	99	1·94	47·47
Small-pox ...	.....	1	1	5	1	.....	.....	.....	...	.....	.....	.....	8	·16	.....
Fever, Intermittent ...	279	165	195	271	620	856	840	674	511	474	391	299	5,575	109·14	
,, Remittent ...	4	18	11	40	73	72	4	14	7	2	.....	.....	245	4·80	·67
,, Continued ...	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	.....	3	·06	
Apoplexy ...	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	2	·04	100·00
Delirium Tremens ...	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dysentery ...	140	155	160	88	107	125	121	91	76	52	61	51	1,227	24·02	1·47
Diarrhœa ...	70	30	47	57	86	206	162	149	143	118	101	57	1,226	24·00	2·12
Hepatitis ...	3	1	1	.....	.....	.....	.....	2	.....	1	1	.....	9	·17	11·10
Spleen Disease ...	3	3	1	4	2	8	1	6	2	5	4	5	44	·86	4·55
Respiratory Diseases ...	47	22	15	29	18	19	19	25	13	16	8	16	247	4·84	2·43
Phthisis Pulmonalis ...	.....	.....	.....	1	1	.....	.....	.....	1	1	1	.....	5	·10	60·00
Dropsy ...	.....	.....	.....	1	1	3	1	4	2	2	.....	2	16	·31	25·00
Scurvy ...	.....	.....	.....	.....	1	.....	.....	1	1	1	2	1	7	·14	14·29
Rheumatism ...	45	20	22	30	25	41	38	27	29	35	30	17	359	7·03	
Venereal Diseases ...	29	21	31	21	24	15	23	18	18	25	10	8	243	4·76	
Eye Diseases ...	1	.....	4	3	6	8	7	6	9	11	5	3	63	1·23	·50
Abscess and Ulcer ...	54	37	32	30	23	53	53	64	52	59	37	36	530	10·38	
Wounds and Accidents ...	48	22	23	21	28	39	33	41	65	38	30	39	427	8·36	
All other Causes ...	39	26	58	48	47	46	78	64	56	45	22	45	574	11·23	
	764	530	608	661	1,083	1,504	1,385	1,194	990	896	708	586	10,909		
	Admitted per cent. of the Average Strength in each Month.														
	12·96	11·28	12·26	13·28	20·55	26·29	24·74	21·25	17·99	18·42	16·01	15·56	213·57		

NATIVE TROOPS, 1865.

IV.

TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in the DINAPORE, BENARES, OUDE, and CAWNPORE DISTRICTS during the year 1865, and the prevalence of the principal Diseases in each Month of the Year.

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Deaths in Hospital.																		Died out of Hospital.
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	
January ...	6,449	204	3·16	3	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
February ...	5,757	168	2·92	6	..	...	2	...	...	...	1	...	2	...	...	...	...	...	...	...	...	...	1	...
March ...	6,197	233	3·76	4	...	...	1	1	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
April ...	6,006	301	5·01	9	...	...	...	1	1	...	...	...	...	2	2	...	...	...	...	...	1	1	1	...
May ...	5,666	228	4·02	5	...	2	...	1	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
June ...	6,435	256	3·98	18	...	7	...	1	3	1	...	...	...	...	...	2	1	...	1	...	...	1	1	...
July ...	6,816	269	3·95	7	...	...	...	...	...	...	1	...	3	...	...	1	...	...	...	...	1	...	1	...
August ...	6,738	280	4·16	9	...	2	...	3	...	...	...	...	...	1	...	...	...	...	1	...	...	2	...	...
September...	6,746	337	5·00	11	...	5	...	...	1	...	...	...	1	...	...	...	...	1	1	...	1	...	1	...
October ...	7,313	461	6·30	25	...	...	...	8	1	1	...	...	5	2	1	...	2	...	...	...	...	2	3	...
November ...	5,704	362	6·35	9	...	...	...	3	1	...	...	...	...	1	...	...	...	...	...	...	...	...	4	...
December ...	6,146	307	5·00	4	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...
						16	3	22	9	2	2	...	13	6	3	3	3	1	3	...	...	3	7	14	...
						Died per 1000 of the Average Strength.																			
For the year	6,331	284	4·49	110	17·37	2·53	·47	3·48	1·42	·32	·32	...	2·05	·95	·47	·47	·47	·16	·47	...	...	·47	1·11	2·21	...

Died at their Homes, and in the Hospitals of other Regiments 47 ; per 1000 of Strength, 6·75.

DISEASES.	Number of Admissions into Hospital in each Month.												Total Admissions during the Year.	Admitted per cent. of Strength.	Died per cent. of Admissions.
	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	...	...	...	...	3	14	1	2	6	2	...	...	28	·44	57·14
Small-pox ...	5	5	6	7	6	...	...	...	...	...	...	2	31	·49	9·68
Fever, Intermittent ...	166	108	152	404	236	295	253	445	549	821	434	239	4,102	64·79	
,, Remittent ...	6	3	1	14	8	6	5	4	16	23	3	3	92	1·45	·70
,, Continued ...	...	...	...	...	...	2	1	...	...	2	...	...	5	·08	
Apoplexy ...	...	1	...	...	...	...	...	...	...	1	...	...	2	·03	100·00
Delirium Tremens ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dysentery ...	26	15	34	58	49	48	48	64	83	87	51	37	600	9·48	2·17
Diarrhœa ...	11	8	13	34	27	29	16	24	14	87	17	16	296	4·68	2·03
Hepatitis ...	2	...	2	...	2	3	2	...	1	1	2	1	16	·25	18·75
Spleen Disease ...	1	1	5	5	9	7	6	5	6	3	7	1	56	·88	5·36
Respiratory Diseases ...	27	13	13	7	13	12	13	31	27	28	20	17	221	3·49	1·36
Phthisis Pulmonalis ...	...	...	...	...	1	2	1	...	...	...	...	...	4	·06	75·00
Dropsy ...	...	...	1	...	...	...	...	...	1	...	...	...	2	·03	
Scurvy ...	...	...	...	...	...	1	2	...	3	1	...	1	8	·13	
Rheumatism ...	26	25	31	35	42	33	26	35	39	40	36	32	400	6·32	
Venereal Diseases ...	43	22	38	32	39	29	31	43	36	41	24	23	401	6·34	
Eye Diseases ...	10	4	5	11	16	13	9	26	15	13	9	11	142	2·24	
Abscess and Ulcer ...	81	59	60	39	48	58	99	75	59	104	47	59	788	12·45	·84
Wounds and Accidents ...	63	40	68	51	46	51	36	67	50	74	50	37	633	10·00	
All other Causes ...	44	36	59	55	41	40	56	68	48	62	51	51	614	9·70	
	511	340	488	752	589	643	605	889	953	1,300	751	530	8,441		
	Admitted per cent. of the Average Strength in each Month.														
	7·92	5·91	7·87	12·52	10·40	9·99	8·88	13·19	14·11	19·01	13·17	8·62	133·33		

The 11th Regiment Native Infantry, removed from the Bhootan Field Force, lost 19 men after reaching Dinapore, from disease contracted in the Dooars; the deduction of these deaths will diminish the death-rate of the Province by 3 per 1000.

NATIVE TROOPS, 1865.

V.

ABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in the MEERUT and ROHILCUND DISTRICTS during the year 1865, *and the prevalence of the Principal Diseases in each month of the year.*

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Deaths in Hospital.																		Died out of Hospital.
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	
January ...	4810	161	3·35	5	...	...	...	...	1	...	...	...	...	...	1	...	2	...	...	...	...	...	...	1	
February ...	4597	141	3·07	4	...	...	1	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	1	...	...
March ...	4289	130	3·03	4	...	...	...	...	1	...	...	...	...	2	...	...	...	...	...	...	...	1	...	...	...
April ...	4024	136	3·38	2	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
May ...	4697	138	2·94	4	...	...	1	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	1	...
June ...	4802	157	3·27	5	...	...	...	3	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
July ...	4707	150	3·19	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
August ...	4834	152	3·14	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
September ...	4774	174	3·64	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
October ...	4038	196	4·85	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
November ...	4222	160	3·79	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
December ...	4197	130	3·10	2	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...
						...	2	3	3	...	...	...	2	2	2	...	6	...	2	1	...	1	1	6	...
						Died per 1000 of the Average Strength.																			
For the year...	4499	152	3·38	31	6·89	...	·45	·66	·66	...	...	...	·45	·45	·45	...	1·33	...	·45	·22	...	·22	·22	1·33	...

Died at their Homes, and in the Hospitals of other Regiments 10; per 1000 of Strength, 2·02.

CAUSES OF ADMISSIONS.	Number of Admissions into Hospital in each Month.												Total Admissions during the year.	Admitted per cent. of Average Strength.	Died per cent. of Admissions.
	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	...	...	...	...	1	...	...	...	...	...	...	...	1	·02	
Small-pox ...	1	...	2	4	4	...	...	...	...	...	...	1	12	·27	16·67
Fever, Intermittent ...	100	78	93	163	229	173	115	295	344	742	190	87	2609	57·98	
,, Remittent ...	1	...	1	1	...	2	...	11	1	1	...	...	18	·40	·23
,, Continued ...	2	...	1	3	1	4	2	1	...	1	7	2	24	·54	
Apoplexy ...	1	...	...	...	1	...	...	...	...	...	...	...	2	·05	
Dysentery ...	9	8	11	23	24	15	19	26	27	32	25	10	229	5·10	·87
Diarrhœa ...	8	7	3	6	12	15	13	19	13	11	11	7	125	2·78	1·60
Hepatitis	3	...	...	2	...	1	1	...	...	...	...	...	7	·16	28·57
Spleen Disease ...	1	1	...	...	3	1	3	5	1	2	2	1	20	·44	
Respiratory Diseases ...	32	16	13	10	10	15	9	14	8	14	17	19	177	3·93	3·39
Phthisis Pulmonalis ...	...	1	...	...	1	2	2	...	1	...	1	...	8	·18	25·00
Dropsy ...	...	...	...	...	1	1	...	...	...	...	...	...	2	·05	50·00
Scurvy ...	...	...	...	1	...	...	1	2	1	1	...	1	7	·16	
Rheumatism ...	50	35	17	12	30	18	19	21	20	21	23	30	296	6·58	
Venereal Diseases ...	28	15	22	17	29	23	19	23	25	17	15	12	245	5·44	
Eye Diseases ...	12	5	7	15	11	20	17	17	16	8	8	8	144	3·20	
Abscess and Ulcer ...	66	58	41	47	62	57	73	86	62	63	41	51	707	15·71	·30
Wounds and Accidents ...	89	46	42	38	45	44	49	58	35	62	59	60	627	13·93	
All other Causes ...	51	38	38	32	51	32	56	57	67	59	46	36	563	12·51	
	454	308	291	374	515	423	398	635	621	1034	445	325	5823		
	Admitted per cent. of the Average Strength in each Month.														
	9·44	6·70	6·78	9·29	10·96	8·81	8·46	13·14	13·01	25·61	10·54	7·74	129·43		

NATIVE TROOPS, 1865.

VI.

TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in the AGRA DISTRICT and in CENTRAL INDIA during the year 1865, and the prevalence of the Principal Diseases in each month of the year.

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Deaths in Hospital.																		Died out of Hospital.
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anœmia.	Wounds and Accidents.	All other Causes.	
January ...	4068	169	4·15	1	...	...	...	...	1	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...
February ...	4345	190	4·37	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.
March ..	4262	191	4·48	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..
April ...	4200	207	4·93	6	...	...	...	2	1	...	...	...	1	...	...	...	1	1	...	...	...	...	...	...	..
May ...	4101	160	3·90	3	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	..
June ...	4131	164	3·97	2	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..
July ...	4155	179	4·31	8	...	3	...	1	...	...	...	...	1	...	1	...	...	...	...	...	...	1	1	...	..
August ...	4103	206	5·02	13	...	8	...	2	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	...
September ...	4113	260	6·32	2	...	1	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
October ...	4178	334	7·99	3	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
November ...	3891	315	8·10	5	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	..
December ...	3552	213	6·00	4	...	...	...	1	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	1	..
						13	...	14	3	...	...	...	4	1	1	...	2	1	1	...	...	1	1	6	...
						Died per 1000 of the Average Strength.																			
For the year...	4092	216	5·28	48	11·73	3·18	...	3·43	·74	...	...	...	·98	·24	·24	...	·49	·24	·24	...	...	·24	·24	1·47	...

Died at their Homes, or in the Hospitals of other Regiments 15; per 1000 of Strength, 3·33.

CAUSES OF ADMISSIONS.	Number of Admissions into Hospital in each Month.												Total Admissions during the year.	Admitted per cent. of Average Strength.	Died per cent. of Admissions.
	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	...	...	...	...	...	1	8	12	1	...	...	...	22	·54	59·09
Small-pox ...	...	...	...	...	1	...	...	...	...	...	...	1	2	·05	
Fever, Intermittent ...	148	130	167	202	142	116	146	311	391	928	502	244	3427	83·75	
,, Remittent ...	4	...	3	5	2	...	...	4	1	...	...	...	19	·46	·49
,, Continued ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Apoplexy ...	...	...	...	1	...	...	...	...	1	1	1	...	4	·10	
Dysentery ...	6	3	10	32	27	24	28	79	53	27	16	15	320	7·82	1·25
Diarrhœa ...	4	6	4	17	24	17	31	53	24	21	16	4	221	5·40	·45
Hepatitis ...	1	...	...	1	...	...	3	...	...	2	...	1	8	·20	12·50
Spleen Disease ...	2	3	5	5	3	3	2	3	...	2	5	13	46	1·12	
Respiratory Diseases ...	10	11	14	7	7	4	4	7	16	8	14	14	116	2·83	1·72
Phthisis Pulmonalis ...	...	...	..	...	...	...	...	...	...	...	1	2	3	·07	33·33
Dropsy ...	...	2	...	...	...	...	...	...	...	...	1	...	3	·07	
Scurvy ...	1	...	...	1	...	...	1	1	...	...	...	1	5	·12	
Rheumatism ...	26	16	18	23	15	7	23	28	25	35	18	28	262	6·43	
Venereal Diseases ...	19	15	27	24	26	21	24	24	13	26	22	16	257	6·28	
Eye Diseases ...	7	5	9	5	4	5	9	15	12	13	7	8	99	2·42	·38
Abscess and Ulcer ...	66	60	45	55	43	64	74	67	50	71	59	40	694	16·96	
Wounds and Accidents...	56	56	49	65	56	42	61	55	61	70	45	50	666	16·27	
All other Causes ...	27	38	22	41	39	34	28	39	48	46	34	25	421	10·28	
	377	345	373	484	389	338	442	698	696	1250	741	462	6595		
	Admitted per cent. of the Average Strength in each Month.														
	9·27	7·94	8·75	11·52	9·49	8·18	10·64	17·01	16·92	29·92	19·04	13·01	161·17		

NATIVE TROOPS, 1865.

VII.

ABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS serving in the PUNJAB during the year 1865, and the prevalence of the Principal Diseases in each month of the year.

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Deaths in Hospital.																		Died out of Hospital.
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	
anuary ...	12,483	471	3·77	17	...	...	1	3	1	.	1	...	...	3	...	...	2	2	...	1	1	1	...	1	...
ebruary ...	12,323	373	3·03	10	...	...	1	3	...	...	...	...	...	1	...	...	3	...	...	...	...	1	...	1	...
arch ...	11,310	354	3·13	6	...	...	...	2	...	...	...	...	...	...	...	...	2	1	...	...	...	...	1	...	...
pril ...	11,149	329	2·95	12	...	...	...	2	4	...	...	...	...	1	...	...	4	...	...	...	...	...	...	1	...
ay ...	10,341	288	2·78	8	...	...	1	4	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	1	...
ne ...	10,117	325	3·21	3	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...
ly ...	10,116	312	3·08	5	...	...	...	2	...	...	...	...	...	...	1	...	1	...	...	...	1	...	...	...	...
ugust ...	10,329	312	3·02	3	...	...	...	...	1	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
ptember ...	10,495	334	3·18	6	...	...	...	4	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
tober ...	9736	425	4·37	7	...	...	...	4	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	1	...
ovember ...	8701	379	4·36	6	...	...	...	1	...	1	...	...	1	1	...	...	1	...	..	...	...	...	1	...	...
ecember ...	9380	358	3·82	9	...	...	1	3	...	...	...	...	1	...	...	...	2	...	...	...	...	...	1	1	...
						...	4	28	6	4	2	...	3	7	1	...	16	3	1	1	2	3	5	6	...
						Died per 1000 of the Average Strength.																			
r the year...	10,540	355	3·37	92	8·73	...	·38	2·66	·57	·38	·19	...	·29	·66	·09	...	1·52	·29	·09	·09	·19	·29	·47	·57	...

Died at their Homes, or in the Hospitals of other Regiments 57 ; per 1000 of Strength, 4·92.

CAUSES OF ADMISSIONS.	Number of Admissions into Hospital in each Month.												Total Admissions during the year.	Admitted per cent. of average Strength.	Died per cent. of Admissions.
	Jan.	Feb.	Mareh.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.			
olera ...	...	...	1	...	...	...	...	...	...	...	...	...	1	·01	...
all-pox ...	7	3	...	2	3	...	...	...	...	...	...	1	16	·15	25·00
ver, Intermittent ...	608	271	254	332	432	451	373	409	499	1507	1312	534	6982	66·24	·54
,, Remittent ...	4	3	1	7	8	6	4	2	4	...	1	...	40	·38	
,, Continued ...	1	...	...	2	2	...	1	1	1	5	...	...	13	·12	
oplexy ...	1	...	...	...	...	...	...	1	...	...	...	...	2	·02	100·00
sentery ...	55	20	26	34	69	61	43	69	69	71	42	43	602	5·71	·50
arrhœa ...	70	29	22	35	61	28	60	77	47	58	37	26	550	5·23	1·27
patitis ...	5	...	2	2	1	2	1	2	1	2	1	1	20	·19	5·00
leen Disease ...	9	5	3	...	2	...	1	1	...	2	3	6	32	·30	...
spiratory Diseases ...	76	48	38	41	27	15	8	23	15	28	16	23	358	3·40	4·47
thisis Pulmonalis ...	...	1	...	...	3	...	...	...	...	1	...	...	5	·05	20·00
opsy ...	...	...	..	...	...	...	...	...	...	...	...	...	...	...	...
rvy ...	...	...	4	1	1	4	..	...	1	2	...	2	15	·14	13·33
eumatism ...	118	89	59	53	35	57	44	31	30	35	24	40	615	5·83	
nereal Diseases ...	38	32	46	25	44	25	38	29	28	43	35	35	418	3·97	
e Diseases ...	14	13	20	24	51	49	27	61	55	49	23	12	398	3·78	·36
scess and Ulcer ...	132	72	73	73	107	110	141	203	123	117	94	104	1349	12·80	
unds and Accidents ...	153	90	133	97	123	101	90	100	84	142	94	70	1277	12·11	
l other Causes ...	106	63	82	96	82	75	94	95	81	86	46	59	965	9·15	
	1397	739	764	824	1051	984	925	1104	1038	2148	1728	956	13,658		
	Admitted per cent. of the Average Strength in each Month.														
	11·19	6·00	6·76	7·39	10·16	9·73	9·14	10·69	9·89	22·06	19·86	10·19		129·58	

NATIVE TROOPS, 1865.

VIII.

TABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS composing the PUNJAB IRREGULAR FORCE during the year 1865, and the prevalence of the Principal Diseases in each month of the year.

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Deaths in Hospital.																		Died out of Hospital.
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents	All other Causes.	
January ...	10,781	437	4·06	11	...	...	...	...	...	...	1	...	...	...	...	...	8	...	...	1	...	...	...	1	..
February ...	10,778	328	3·05	5	...	...	1	...	...	2	...	...	...	...	...	...	...	...	...	...	...	1	...	1	..
March ...	10,182	274	2·69	7	...	...	...	1	1	...	...	...	...	1	...	...	...	...	1	...	...	...	...	1	2
April ...	10,294	288	2·80	12	...	1	...	1	2	...	...	...	1	1	1	...	3	...	...	...	...	...	1	1	..
May ...	9482	244	2·57	15	...	1	2	2	3	...	...	...	3	1	1	...	..	...	...	...	...	...	1	1	.
June ...	9384	266	2·83	6	...	...	1	1	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	1	..
July ...	9153	292	3·19	9	...	..	1	...	1	1	5	...	...	...	...	...	...	...	...	...	...	...	...	1	.
August ...	9163	282	3·08	6	...	...	1	1	...	...	1	...	1	...	...	...	...	...	...	1	...	1	...	...	..
September ...	9182	276	3·01	1	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	..
October ...	9481	357	3·77	3	..	...	...	...	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	..
November ...	10,662	454	4·26	9	...	...	...	1	3	1	...	...	2	...	...	...	...	1	...	...	...	...	...	1	..
December ...	11,029	372	3·37	8	...	...	...	...	1	1	...	...	1	1	...	...	1	...	2	...	...	...	...	1	.
						2	6	7	13	5	7	...	9	5	2	...	15	1	3	2	...	1	3	9	2
						Died per 1000 of the Average Strength.																			
For the year...	9964	323	3·24	92*	9·23	·20	·60	·70	1·31	·50	·70	...	·90	·50	·20	...	1·51	·10	·30	·20	...	·10	·30	·91	·20

CAUSES OF ADMISSIONS.	Number of Admissions into Hospital in each Month.												Total Admissions during the year.	Admitted per cent. of Average Strength.	Died per cent. of Admissions.
	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	...	...	...	3	1	1	...	...	1	...	...	...	6	·06	33·33
Small-pox ...	1	...	...	1	5	4	1	2	...	...	1	1	16	·16	37·50
Fever, Intermittent	477	157	212	314	289	258	267	342	341	1195	1084	447	5383	56·41	·44
„ Remittent and Continued ...	13	14	31	26	31	21	4	15	14	26	20	23	238		
Apoplexy ...	1	...	...	...	1	...	6	...	...	...	...	...	8	·08	87·50
Dysentery and Diarrhœa ...	53	30	32	60	86	73	73	92	74	85	91	84	833	8·36	1·68
Hepatitis ...	2	2	1	...	3	1	2	...	...	1	2	2	16	·16	12·50
Spleen Disease ...	11	2	2	1	3	4	1	5	1	4	6	8	48	·48	...
Respiratory Diseases ...	144	58	62	54	22	32	20	23	11	24	19	48	517	5·19	2·90
Phthisis Pulmonalis ...	1	1	...	2	2	...	...	...	2	1	2	1	12	·12	25·00
Scurvy ...	4	1	...	2	5	2	3	1	2	...	1	2	23	·23	
Rheumatism ...	77	52	27	46	25	24	29	59	33	36	44	43	495	4·97	
Venereal Diseases ...	37	17	21	16	17	23	30	29	15	27	23	15	270	2·71	
Eye Diseases ...	24	7	10	26	35	15	27	26	14	41	15	11	251	2·52	·32
Abscess and Ulcer ...	162	86	72	79	101	93	192	196	136	141	128	141	1527	15·33	
Wounds and Accidents...	133	82	110	104	115	112	99	113	91	121	108	125	1313	13·18	
All other Causes ...	114	71	67	123	110	76	88	95	85	98	57	67	1051	10·54	
	1254	580	647	857	851	739	842	998	820	1800	1601	1018	12,007		
	Admitted per cent. of the Average Strength in each Month.														
	11·63	5·38	6·35	8·33	8·97	7·88	9.20	10·89	8·93	18·99	15·01	9·23	120·50		

* 43 Men died while absent from their Regiments; with a Strength of 11,000, the death-rate of the year, including absent deaths, may be estimated at 12·27 per 1000.

NATIVE TROOPS, 1865.

IX.

'ABLE showing the SICKNESS and MORTALITY among the NATIVE TROOPS composing the CENTRAL INDIA IRREGULAR FORCE during the year 1865, *and the prevalence of the Principal Diseases in each month of the year.*

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Strength.	Number of Deaths.*	Died per 1000 of Strength.	Causes of Deaths in Hospital.																			
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Delirium Tremens.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.	Cause unknown.
'anuary ...	3741	130	3·48	4	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
'ebruary ...	3826	125	3·27	5	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	2
Iarch ...	3887	124	3·19	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...
pril ...	3807	134	3·52	7	...	1	...	2	...	...	...	...	...	...	...	...	...	...	2	...	...	...	1	...	1
Iay ...	3930	129	3·28	10	...	8	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
une ...	3934	133	3·38	7	...	4	...	...	1	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...
uly ...	3941	127	3·22	18	...	18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
ugust ...	3976	137	3·45	2	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...
eptember ...	3964	170	4·29	4	...	3	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
ctober ...	3938	166	4·21	5	...	...	...	...	2	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1	1
ovember ...	3920	158	4·03	3	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
ecember ...	3780	140	3·70	3	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	1
						34	...	11	3	...	1	...	2	2	...	1	1	...	3	...	...	...	3	3	5
						Died per 1000 of the Average Strength.																			
or the year...	3887	139	3·58	69	17·75	8·75	...	3·60			·26	...	1·03		...	·26	·26	...	·77	...	...	...	·77	77	1·28

CAUSES OF ADMISSIONS.	Number of Admissions into Hospital in each Month.												Total Admissions during the year.	Admitted per cent. of average Strength.	Died per cent. of Admissions.
	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.			
holera ...	...	...	...	...	8	1	29	3	7	...	...	...	48	1·23	70·83
mall-pox ...	...	...	...	...	1	...	...	...	...	...	...	...	1	·02	...
ever, Intermittent ...	83	55	60	84	52	70	59	105	133	223	150	107	1181	31·59	1·14
„ Remittent and Continued ...	1	8	12	8	...	2	1	2	4	6	2	1	47		
ysentery ...	6	3	4	4	4	14	10	20	14	10	4	1	94	5·92	1·74
iarrhœa ...	3	2	3	7	14	27	28	21	15	6	3	7	136		
epatitis ...	...	...	1	...	...	1	...	1	...	...	...	...	3	·08	...
pleen Disease ...	2	...	1	1	1	1	...	1	...	1	1	...	9	·23	...
espiratory Diseases ...	20	5	15	7	9	5	8	10	11	8	7	25	130	3·35	·77
hthisis Pulmonalis ...	...	...	...	...	...	...	1	...	...	...	...	...	1	·02	...
urvy ...	...	...	...	...	...	...	...	2	...	1	...	1	4	·10	
heumatism ...	4	14	10	11	13	15	11	11	8	6	10	11	124	3·19	
enereal Diseases ...	15	16	19	15	22	9	10	18	15	18	13	19	189	4·86	
ye Diseases ...	4	14	8	15	16	14	15	45	41	28	7	12	214	5·51	·55
bscess and Ulcer ...	11	45	23	29	35	48	48	51	55	53	49	36	483	12·43	
ounds and Accidents ...	28	68	39	27	44	28	31	52	45	47	33	55	497	12·79	
ll other Causes ...	77	30	26	32	55	52	52	57	35	39	21	20	496	12·76	
	254	260	221	240	274	287	303	399	383	441	300	295	3657		
	Admitted per cent. of the Average Strength in each Month.														
	6·79	6·79	5·69	6·31	6·97	7·29	7·60	10·03	9·66	11·19	7·65	7.80	94·08**		

The Bhopal Battalion has not supplied during the year the Returns from which this Statement has been prepared for the other Central India Corps. This Regiment, ith a Strength of 730 men, had 20 deaths, of which 5 were from Cholera; the death-rate is 27·40 per 1000.

* Including men who died on outposts.

** The Daily Sick-rate and the Admission-rate of this Force is under-estimated in such a Statement as is here given, since the outposts, to which no Medical fficer is attached, furnish no details such as can be incorporated in the Returns received from the Head Quarters of each Regiment.

NATIVE TROOPS, 1865.

X.

COMPARATIVE STATEMENT of the ratios of SICKNESS and MORTALITY among the NATIVE TROOPS serving in the various PROVINCES of the BENGAL PRESIDENCY during the year 1865.

DISEASES.	BENGAL PROPER. Average Strength ... 5,108; Daily Sick per cent. of Strength ... 7·48; Admitted per cent. of Strength ... 213·57; Died per 1000 of Strength— A. Cholera ... 9·20; B. From all Causes ... 31·32; C. Absent Deaths ... 15·25			DINAPORE, BENARES, OUDE, AND CAWNPORE DISTRICTS. Average Strength ... 6,331; Daily Sick per cent. of Strength ... 4·49; Admitted per cent. of Strength ... 133·33; Died per 1000 of Strength— A. Cholera 2·53; B. From all Causes ... 17·37; C. Absent Deaths ... 6·75			MEERUT AND ROHILCUND DISTRICTS. Average Strength ... 4,499; Daily Sick per cent. of Strength ... 3·33; Admitted per cent. of Strength ... 129·43; Died per 1000 of Strength— A. Cholera ... ...; B. From all Causes ... 6·89; C. Absent Deaths ... 2·02			AGRA DISTRICT AND CENTRAL INDIA. (Excluding Regiments of C. I. Irregular Force.) Average Strength ... 4,092; Daily Sick per cent. of Strength ... 5·28; Admitted per cent. of Strength ... 161·17; Died per 1000 of Strength— A. Cholera ... 3·18; B. From all Causes ... 11·73; C. Absent Deaths ... 3·33			PUNJAB. (Excluding Regiments of Frontier Irregular Force.) Average Strength ... 10,540; Daily Sick per cent. of Strength ... 3·37; Admitted per cent. of Strength .. 129·58; Died per 1000 of Strength— A. Cholera ... ...; B. From all Causes 8·73; C. Absent Deaths ... 4·92			BENGAL PRESIDENCY. (Excluding the Bhootan Force.) Average Strength ... 32,129; Daily Sick per cent. of Strength ... 4·48; Admitted per cent. of Strength ... 147·56; Died per 1000 of Strength— A. Cholera ... 2·83; B. From all Causes 14·72; C. Absent Deaths ... 6·02		
	Admitted per cent. of average Strength.	Died per cent. of Admissions.	Died per 1000 of the average Strength.	Admitted per cent. of average Strength.	Died per cent. of Admissions	Died per 1000 of the average Strength.	Admitted per cent. of average Strength.	Died per cent. of Admissions.	Died per 1000 of the average Strength.	Admitted per cent. of average Strength.	Died per cent. of Admissions.	Died per 1000 of the average Strength.	Admitted per cent. of average Strength.	Died per cent. of Admissions.	Died per 1000 of the average Strength.	Admitted per cent. of average Strength.	Died per cent. of Admissions.	Died per 1000 of the average Strength.
Cholera ...	1·94	47·47	9·20	·44	57·14	2·53	·02	.....	.....	·54	59·09	3·18	·01	.....	.....	·57	49·73	2·83
Small-pox ...	·16	.....	.....	·49	9·68	·47	·27	16·67	·45	·05	.....	.. ..	·15	25 00	·38	·21	13·04	·28
Fever, Intermittent ...	109·14	·67	4·50	64·79	·79	3·48	57·98	·23	·66	83·75	·49	3·43	66·24	·54	2·66	73·17	·39	4·38
,, Remittent & Continued	4·86		3·13	1·53		1·74	·94		·66	·46		·74	·50		·95	1·54		
Apoplexy ...	·04	1 0·00	·39	·03	100·00	·32	·05	.....	.....	·10	....	.....	·02	100·00	·19	·04	50·00	·19
Dysentery ...	24·02	1·47	3·52	9·48	2·17	2·05	5·10	·87	·45	7·82	1·25	·98	5·71	·50	·29	10·02	1·45	1·25
Diarrhœa ...	24·00	2 12	5·09	4·68	2·03	·95	2·78	1·60	·45	5·40	·45	·24	5·23	1·27	·66	8·05		1·37
Hepatitis ...	·17	11·10	·20	·25	18·75	·47	·16	28·57	·45	·20	12·50	·24	·19	5·00	·09	·20	14·29	·28
Spleen Disease ...	·86	4·55	·39	·88	5·36	·47	·44	.....	.....	1·12	.....	.....	·30	.....	.....	·64	2·44	·16
Respiratory Diseases ...	4·84	2·43	1·17	3·49	1·36	·47	3·93	3·39	1·33	2·83	1·72	·49	3·40	4·47	1·52	3·76	3·07	1·15
Phthisis Pulmonalis ...	·10	60·00	·59	·00	75·00	·47	·18	25·00	·45	·07	33·33	·24	·05	20·00	·09	·09	35·71	·31
Dropsy ...	·31	25·00	·78	·03	.....	.....	·05	50·00	·22	·07	....	.....	.. ...	.....	·09	·03	25·00	·19
Scurvy ...	·14	14·29	·20	·13	.....	.....	·16	.....	.....	·12	.....	.....	·14	13·33	·19	·13	7·14	·09
Rheumatism ...	7·03			6·32			6·58			6·43			5·33			6·18		
Venereal Diseases ...	4·76			6·34			5·44			6·28			3·97			5·11		
Eye Diseases ...	1·23			2·24			3·20			2·42			3·78			2·70		
Abscess and Ulcer ...	10·33	·50	2·16	12·45	·84	3·95	15·71	·30	1·77	16·96	·38	2·19	12·80	·36	1·62	13·11	·44	2·15
Wounds and Accidents ...	3·36			10·00			13·93			16·27			12·11			11·82		
All other Causes ...	11·23			9·70			12·51			10·28			9 15			10·14		
	213·57	.....	* 31·32	133·33	.....	* 17·37	129·43	.....	* 6·89	161·17	.....	* 11·73	129·58	.....	* 8·73	147·56	.....	* 14·72

* This total does not include deaths of men absent from their Regiments. The Ratio of Absent Deaths in each Province is stated in the upper Section of this Table; it is estimated on a Strength 10 per cent. higher than the average of

NATIVE TROOPS, 1865.

XI.

COMPARATIVE STATEMENT of the Ratios of SICKNESS and MORTALITY among the TROOPS composing the BHOOTAN FIELD FORCE, the CENTRAL INDIA FORCE, and the PUNJAB FRONTIER FORCE.

DISEASES.	BHOOTAN FIELD FORCE. Average Strength 5,084; Daily sick per cent. of Strength 13·75; Admitted per cent. of Strength 384·90; Died per 1000 of Strength— A. Cholera 22·23; B. All Causes 94·41; C. Absent Deaths 25·00			CENTRAL INDIA FORCE. Average Strength 3,887; Daily sick per cent. of Strength 3·58; Admitted per cent. of Strength 94·08; Died per 1000 of Strength— A. Cholera 8·75; B. All Causes / C. Absent Deaths 17·75			PUNJAB FRONTIER FORCE. Average Strength 9,964; Daily sick per cent. of Strength 3·24; Admitted per cent. of Strength 120·50; Died per 1000 of Strength— A. Cholera ·20; B. All Causes / C. Absent Deaths 12·27		
	Admitted per cent. of average Strength.	Died per cent. of Admissions.	Died per 1000 of the average Strength.	Admitted per cent. of average Strength.	Died per cent. of Admissions.	Died per 1000 of the average Strength.	Admitted per cent. of average Strength.	Died per cent. of Admissions.	Died per 1000 of the average Strength.
Cholera	3·76	59·16	22·23	1·23	70·83	8·75	·06	33·33	·20
Small-pox	·02	.....	.....	·02	.....	.....	·16	37·50	·60
Fever, Intermittent	203·97	·96	20·06	30·38	1·14	3·60	54·02	·44	2·51
„ Remittent and Continued	6·00			1·21			2·39		
Apoplexy	·04	.....	·39	.....	.....	·26	·08	87·50	·70
Dysentery ... ... / Diarrhœa	77·62	3·37	26·16	5·92	1·74	1·03	8·36	1·68	1·40
Hepatitis	·35	11·11	·39	·08	.....	.....	·16	12·50	·20
Spleen Disease	1·48	4·00	·59	·28	.....	·26	·48	.....	.....
Respiratory Diseases	6·90	8·70	2·56	3·35	·77	·26	5·19	2·90	1·51
Phthisis Pulmonalis	·06	100·00	·59	·02	.....	·77	·12	25·00	·30
Dropsy	·24	25·00	·59	.....	.....	.....	.....	.....	·20
Scurvy	6·25	13·21	8·26	·10	.....	.....	·23	.....	.....
Rheumatism	13·08			3·19			4·97		
Venereal Diseases	3·05			4·86			2·71		
Eye Diseases	1·51			5·51			2·52		
Abscess and Ulcer	24·49	1·61	2·76	12·43	·55	.. ...	15·33	·32	.....
Wounds and Accidents	21·09		7·47	12·79		·77	13·18		·30
All other Causes	14·99			12·76		·77	10·54		1·31
Cause unknown	.....	.....	2·36	.....	.....	1·28	.....	.....	.....
All Causes	384·90	.....	94·41	94·08	.....	17·75	120·50	.....	9·23

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XII.

STATEMENT showing the DAILY AVERAGE SICK-RATE of each Station in each month, and the ratio in which the CHIEF DISEASES have contributed to make up the ANNUAL ADMISSION RATE of the STATIONS of the BENGAL PRESIDENCY.

STATIONS.	Average Strength for the period of observation.	Daily Sick per cent. of average Strength in each Month.												Average Daily Sick per cent. of Strength for the year.	Admitted into Hospital per cent. of average Strength.										Admitted per cent. of Strength during the period of observation.
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.		Cholera.	Fevers.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen.	Ophthalmia.	Rheumatism.	Venereal Diseases.	Diseases of the Respiratory Organs.	All other Causes.	
Fort William ...	643	4·88	3·66	4·96	3·78	7·57	9·14	11·33	8·66	4·95	4·49	5·60	8·71	6·48	2·64	84·93	34·21	14·93	...	·15	1·71	8·55	7·62	2·64	21·46	178·84
Alipore ...	644	7·55	8·15	7·47	6·85	6·62	7·10	11·13	9·36	10·07	11·36	9·63	7·62	8·52	3·26	118·01	20·96	37·42	·16	...	·77	7·61	3·11	2·64	34·01	227·95
Barrackpore * ...	778	6·02	8·00	11·27	10·62	4·57	15·59	21·16	16·52	15 84	13·38	7·83	6·38	12·24	1·54	165·94	49·23	39·07	13	·77	1·42	6·94	3·73	4·11	42·16	315·04
Dacca ...	466	4·53	2·76	7·43	4·84	5 18	5·37	4·31	3·45	4·16	3·70	5·76	5·17	4·70	5·15	81·76	25·54	28·54	...	·64	·42	4·08	86	3·43	24·04	174 46
Cherrapoonjee ...	448	3·41	2 97	2·82	10·08	6·33	7·94	12·28	5·90	5·90	6·83	8·94	5·61	7·02	·45	78·57	24·11	43 30	...	·22	·67	4·24	9·60	7·81	18·75	187·72
Sylhet ...	372	8·44	9·23	5·96	4·26	12·50	15·03	13·24	12·38	6·35	4·03	3·26	4·29	8·20	1·34	195·70	5·91	16·94	·81	1·35	·26	6·18	7·26	8·07	26·88	270·70
Cachar ...	179	4·37	4·97	3·87	2 21	2·76	5·52	7·22	6·04	6·70	7·51	4·09	3·49	4·90	·56	62·01	7·82	8·94	...	...	2·23	11·17	4·47	7·81	22·92	127·93
Nowgong ...	88	7·95	3·40	4·55	9·09	10·23	13·64	15·12	12·28	10·64	8·51	6·38	4·35	9·38	2·27	153·41	26·14	31·82	1·14	...	2·26	25·00	7·95	9·10	60·23	319 32
Debrooghur ...	569	6·50	5·00	5·83	7·67	7·39	9·83	10·34	11·73	16·21	11·21	12·03	9·91	9·39	·88	134·97	13·88	18·63	·35	1·41	1·24	12·65	1·93	7·03	51·14	244·11
Bhaugulpore ...	358	1·25	3·42	2·06	4·69	6 87	6·55	5·56	5·36	5·12	9 62	11·91	10·43	6·45	2·79	135·76	15·09	10 90	·28	4·47	2·24	3·91	9·50	4·72	38·83	228·49
Dorundah (11 months) ...	551	1·34	1·05	1·22	1·87	2·55	1·32	2·31	3·72	4·01	2 50	3·13	...	2·29	...	58·09	12·70	1·09	...	·73	1·63	2·18	2 00	3·81	11 62	83·85
Dinapore * ...	626	3·99	2·07	1·79	1·88	2·06	1·18	1·33	2·71	6·63	16·76	22·73	11·06	5·94	...	82·91	9·58	13·26	...	...	1·12	2·39	2·56	1·12	18·37	131·31
Segowlie ...	333	3·65	4·68	4·64	4·09	3·17	4·90	4·28	3·63	5·15	2·09	7·42	8·29	4·68	...	31·86	10·35	2·07	·89	...	1·19	7 69	10·65	4 73	35·21	104·14
Benares ...	595	2·84	2·65	2·74	8·42	3·20	2·11	2·29	3·66	3·80	3·09	2·76	1·86	3·27	·67	65·88	14·96	6·22	...	...	2·02	8·07	8·74	11·76	40·17	158·49
Goruckpore ...	620	2·94	2·76	4·31	4·52	3·70	4·09	3·49	3·80	3·64	3·40	3·59	3·88	3·67	...	57·10	5·48	5·48	...	·65	2·58	5·97	6·77	4·19	25·97	114·19
Fyzabad (10 months) ...	705	2·01	2·00	2·43	3·28	2·65	2·19	2·48	2·60	2·31	2·45	...	...	2·44	·99	34·33	6·95	2·69	·14	...	·85	3·26	6·67	1·99	11·63	69·50
Lucknow ...	1569	2·37	2·11	3·93	4·73	4·45	3·96	4·35	4·75	4·83	3·65	3·38	2·85	3·77	·19	44·36	9·50	2·29	·32	·77	3·12	6 95	3·25	1·47	38·81	111 03
Seetapore (7 months) ...	367	...	...	2·54	6·08	7·49	5·19	5·48	6·05	7·51	...	...	...	5·60	...	34·60	6 54	1·09	·27	...	3 00	8·99	2·73	27	31·61	89·10
Banda ...	372	2·72	2·72	2·93	5·61	6·25	5·19	4·68	5·13	12·00	17·33	18·16	10·26	7·54	·27	241·12	8·07	6·72	...	3·23	1·07	5·11	3·49	4·84	28 23	302·15
Cawnpore (7 months) ...	573	...	...	...	...	...	6·86	8·19	5·26	4·47	2·99	4·05	3·58	5·11	1·74	46·08	6·81	3·84	·53	·52	1·57	4·71	4·02	2·09	10·47	82·38
Allahabad ...	574	3 18	3·13	3·63	3·23	2·04	1·82	2·53	3 03	3·53	4·22	4·85	4·76	3·43	...	43·21	9·06	1·74	·17	2 96	2 61	4·18	6·45	4·18	34·15	108·71
Nagode ...	501	8·24	8·35	10·94	11·26	8·25	9·38	5·22	5·29	5·87	8 52	9·06	5·58	7·65	·60	70 66	7·78	3·79	·40	1·60	1·79	7·78	14·77	2·00	55·89	167·06
Shahjehanpore ...	276	3·75	4·05	2·67	4·70	7·45	5·91	5·10	3·56	3·89	4·14	3·62	3·51	4·31	...	59·06	7·61	5·43	...	...	5·43	13·41	9·42	4 71	76·45	181·52
Bareilly ...	824	3·26	3·42	3·18	3·57	2·56	2·82	2·29	3·20	4·24	10·80	4·98	3·35	4·00	...	116·26	5·59	1·94	·12	...	1·81	5·83	3·64	4·13	43·93	183·25
Almorah ...	563	3·24	2·63	2·41	2·33	1·64	2·12	1·88	3·47	2·98	2·85	2·43	1·71	2·47	...	44·40	1·42	3·55	·18	·89	3·20	5·69	6·93	2·13	34·10	102·49
Deyrah ...	100	3·33	2·44	1·94	3·85	3·85	1·92	2·70	2·61	2·36	4·76	1·54	3·12	2·83	1·00	28·00	5·00	2·00	..	...	2·00	7·00	5·00	2·00	40·00	92·00
Roorkee ...	516	5·10	5·07	4·68	4·64	5·51	5·51	6·19	4·87	4·19	4·45	5·68	5·38	5·09	...	50·77	6·01	2·91	...	2·13	2 52	7·75	4 07	4·46	50·39	131·01
Moradabad ...	388	2·11	1·63	·54	1·08	·54	2·09	1·76	1·74	1·74	1·73	1·94	2·22	1·61	...	25·26	4·64	1·29	...	·26	1·55	1·80	3·61	5·15	21·65	65·21
Meerut ...	859	3·15	2·36	3·48	3·49	2·82	3·46	3 73	3·24	4·22	3·62	3·66	3·07	3 35	...	60·88	7·57	2·10	·23	...	7·22	8·73	5·12	4·31	51·22	147·38
Allyghur (8 months) ...	...	1·90	·95	2·00	...	1·90	1·77	1·91	2·28	3·13	...	...	...	2·05	...	19·86	2·44	3·31	...	·52	·87	2·79	7·49	1·05	16·03	54·35
Delhi ...	589	3·96	4·37	3·95	3·63	3·19	4·10	3·49	2·84	4·18	3·03	3·97	3·02	3·62	...	43·29	3·57	2 55	·51	...	1·36	5 77	3·90	5·09	41.94	107·98
Agra ...	647	5·87	3·78	3·08	3·55	1·84	1·78	2 18	2·47	3·01	4·01	3·19	1·91	3·09	·15	43 74	5·87	2·47	·15	...	2·63	2·94	6·49	1·39	22·57	88 40
Morar ...	1164	3·80	4·63	5·21	6·39	5·57	5·33	6·21	6·85	7·81	6·58	7·50	7·27	6·25	·77	95 44	12·03	11·86	·17	·77	3·09	6·27	8·93	4·47	53·61	197·41
Jhansi ...	921	3·24	4·35	4·08	3·93	2·97	3·32	3·13	4·36	4·54	9·10	9.34	7·14	4·71	1·30	75·35	5·43	1 63	·22	·87	1·52	5·64	4·34	·87	33·77	130·94
Nowgong ...	437	3·12	4·01	4·54	5·19	4·58	5·28	4·27	5·81	9·03	9·52	9·36	5·36	5·76	...	76·20	8·47	2·52	·46	2·52	2·51	7·78	6·40	2·98	64·53	174·37
Lullutpore ...	428	4·77	4·91	4·17	2·99	2·67	2·10	3·56	3·82	7·46	15·66	16·98	8·00	6·05	...	175·23	4·67	1·87	...	4·21	·70	6·78	3·97	5·84	32 48	235·75
Jubbulpore ...	109	4·03	4·92	4·17	4·24	4·95	4·04	5·15	5·26	9·28	10·31	7·38	6·50	5·73	...	75·23	6·42	3·67	...	...	2·75	11·93	4 59	2·75	35·78	143·12
Erinpoorah ...	107	2·29	2·46	3·42	4·96	1·96	3·74	4·81	2·78	1·94	7·78	4·30	5 00	3·68	...	24·30	4·67	....	...	...	1·87	3·74	2·80	1·87	39·25	78·50
Deolee ...	279	5·25	6·94	7·47	5·56	4·83	5·58	5·11	5·96	8·16	7·66	8·45	7·74	6·53	...	59·85	8·25	10·40	·36	...	4·66	13·62	6·45	1·43	77·06	182·08
Umballa ...	937	3·32	3·31	3·86	2·81	2·49	3·83	4·11	3·86	4·59	4·48	3·55	2·76	3·58	·11	28·17	3·31	5·01	·11	·21	3·84	5·98	5·02	1·60	32·87	86·23
Jullundur ...	615	4·93	4·43	4·47	3·64	2·57	2·95	2·21	2·18	3·23	3 47	3·47	1·59	3·26	...	66·02	2·76	1·14	...	·16	1·95	4·39	2·60	4·23	30·25	113 50
Ferozepore ...	664	1 69	1·25	1·23	1·66	1·39	1·00	·84	1·64	1·31	2·35	3·18	4·55	1·61	...	27·41	1·20	·75	·15	...	8·59	2·11	3·01	1·21	27 56	71·99
Mooltan ...	539	6 34	5·71	4·29	1·52	2·39	2 79	2·34	3·01	2·21	2·20	2·59	1·65	3 96	...	60·11	4·82	1·86	...	..	1·49	21·15	1·11	12 80	34·69	138·03
Sealkote (10 months) ...	384	...	...	3·98	3.77	3·08	4·19	3·61	3·09	4·19	5·28	2·97	3·81	3·23	...	22·92	2·34	2·86	·26	·26	2·09	5·73	6·51	6·51	54·69	104·17
Dhurmsalla (9 months) ...	666	2·70	2·86	2·58	2·29	2·30	3·03	3 19	2·18	1·55	...	...	...	2·52	...	23·72	2·25	1·35	·30	...	2·56	4·05	1·50	1·05	15·17	51·95
Umritsur (9 months) ...	...	4·81	3·45	...	...	...	4·23	4·93	3·55	2·80	1·41	2·82	2·08	3·62	...	49·09	4·13	2·75	...	...	·46	6·88	2·29	8·71	28·90	103·21
Meean Meer ...	1222	2·96	2·17	5·15	4·68	3·87	4·33	3·68	3·68	3·40	6·01	6·91	4·75	4·36	...	79·38	4·50	1·96	...	·08	2·12	5·89	3·28	3·60	46·24	147·05
Rawul Pindee ...	1621	3·27	2·94	2·94	2 80	3·72	3·26	3·23	3·10	3·36	3·01	3·31	3·36	3·18	...	28·62	2·84	3·15	·68	·43	4·81	5·49	4·81	2·47	31·09	84·39
Attock ...	116	2·58	·86	·86	3·45	4 31	4·31	2·58	1·73	2·58	3·45	3·45	2·58	2·73	...	55·17	3·45	7·76	...	...	2·58	6·90	3·45	...	46·52	119·83
Peshawur ...	3779	4·12	2·83	2·50	2·64	2·47	3·00	3·09	3·09	3·35	5·30	4·73	4·59	3·45	...	106·06	10·11	9·82	·10	·53	4·02	4·52	4·42	2·78	33·74	176·10

* The rates were increased by Regiments withdrawn for Bhootan, having been cantoned in these Stations for a portion of the year.

NATIVE TROOPS, 1865.

XIII.

TABLE Showing the MORTALITY in each STATION, the CAUSES of DEATH, and the ratio of DEATHS to STRENGTH.

STATIONS.	Average Strength for the period of observation.	Causes of Deaths in Regimental Hospitals.																		Total Deaths.		Died per 1000 of Average Strength.			
		Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds & Accidents.	All other causes.	Cause unknown.	A. Of men present with their Regiments.	B. Of men absent from their Regiments.*	A. With their Regiments. a. Cholera.	b. All other causes.	c. All causes.	B. Absent deaths.
Fort William ...	643	8	...	6	...	...	...	4	...	...	...	1	1	1	...	...	...	...	2	...	23	...	12·44	23·33	35·77	...
Alipore ...	644	9	...	2	3	...	...	3	...	...	...	...	...	...	...	1	...	...	...	...	18	...	13·97	13·97	27·94	...
Barrackpore ...	778	8	...	5	...	...	1	1	11	...	1	1	...	...	...	...	...	...	2	...	30	...	10·28	28·28	38·56	...
Dacca ...	466	8	...	1	...	...	...	3	1	...	1	...	...	...	1	...	...	...	...	...	15	...	17·17	15·02	32·19	.
Cherra Poonjee ...	448	...	...	...	1	...	...	1	2	...	...	1	...	...	1	...	...	...	...	...	6	...	.....	13·39	13·39	...
Sylhet and Cachar ...	551	5	...	5	6	...	1	2	7	...	...	1	...	1	...	...	...	...	4	...	32	...	9·07	49·01	58·08	...
Nowgong ...	88	2	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	4	...	22·73	22·72	45·45	...
Debrooghur ...	569	2	...	1	...	5	...	1	4	1	...	1	...	1	2	...	...	...	1	...	19	...	3·51	29·71	33·22	...
Bhaugulpore ...	358	5	...	2	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	...	9	...	13·97	11·17	25·14	...
Dorundah ...	551	...	...	1	...	...	...	2	...	...	...	...	...	...	...	...	1	...	...	...	4	...	...	7·26	7·26	...
	5,108	47	...	23	11	5	2	18	26	1	2	6	1	3	4	1	1	...	9	...	160	84	9·20	22·12	31·32	15·25
Dinapore ...	626	...	...	7	1	...	...	6	3	...	...	...	...	...	...	...	...	1	1	...	19	...	...	30·35	30·35	...
Segowlie ...	338	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	...	2·96	2·96	...
Benares ...	595	2	...	2	...	...	...	1	...	...	...	1	...	...	...	...	...	2	2	...	10	...	3·36	13·45	16 81	..
Gorackpore ...	620	...	...	...	2	...	1	...	...	...	...	...	...	2	...	...	1	...	1	...	7	...	...	11·29	11·29	...
Fyzabad (10 months) ...	705	6	1	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	1	...	10	...	8·51	5·67	14·18	...
Lucknow ...	1,569	2	2	4	3	...	...	...	1	...	1	...	...	...	...	...	...	1	2	...	16	...	1·27	8·93	10·20	...
Seetapore (7 months) ...	367	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	2	...	...	5·45	5·45	...
Banda ...	372	...	...	2	2	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	6	...	...	16·13	16·13	...
Cawnpore (7 months) ...	573	4	...	1	...	...	...	...	1	1	...	...	1	...	...	...	1	...	2	...	11	...	6·98	12·22	19·20	...
Allahabad ...	574	...	...	2	1	...	1	1	...	1	1	...	...	1	...	...	...	...	1	...	9	...	...	15·68	15·68	...
Nagode ...	501	2	...	3	...	2	...	2	...	...	1	2	...	...	...	...	1	2	4	...	19	...	3·99	33·93	37·92	...
	6,331	16	3	22	9	2	2	13	6	3	3	3	1	3	...	...	3	7	14	...	110	47	2·53	14·84	17·37	6·75
Shahjehanpore ...	276	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bareilly ...	824	...	1	...	...	...	...	...	...	1	...	3	...	...	...	...	...	...	...	...	5	...	...	6·07	6·07	...
Almorah ...	563	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	1	...	3	...	6	...	...	10·66	10·66	...
Deyrah ...	100	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Roorkee ...	516	...	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	5	...	...	9·69	9·69	...
Moradabad ...	388	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	2	...	...	5·15	5·15	...
Meerut ...	859	...	1	...	...	...	...	1	1	1	...	...	...	1	...	...	...	...	...	...	5	...	...	5·82	5·82	...
Allyghur ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...
Delhi ...	589	...	...	...	1	...	...	...	1	...	...	3	...	...	1	...	...	...	1	...	7	...	...	11·88	11·88	...
	4,499	...	2	3	3	...	...	2	2	2	...	6	...	2	1	...	1	1	6	...	31	10	...	6·89	6·89	2·02
Agra ...	647	...	...	1	2	...	...	...	...	...	...	1	...	1	...	...	...	...	2	...	7	...	...	10·82	10·82	...
Morar ...	1,164	7	...	8	...	...	...	3	1	...	...	...	...	...	...	...	...	...	...	...	19	...	6·01	10·31	16·32	...
Jhansi ...	921	6	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	1	2	...	12	...	6·51	6·52	13·03	...
Nowgoug ...	437	...	...	...	...	...	...	1	...	1	...	1	...	...	...	...	...	...	1	...	4	...	...	9·15	9·15	...
Lullutpore ...	428	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	5	...	...	11·68	11·68	...
Jubbulpore ...	109	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Erinpoorah ...	107	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Deolee ...	279	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	3·58	3·58	...
	4,092	13	...	14	3	...	...	4	1	1	...	2	1	1	...	...	1	1	6	...	48	15	3·18	8·55	11·73	3·33
Umballa ...	937	...	...	1	1	...	...	...	...	...	...	1	...	...	...	...	1	...	3	...	7	...	...	7·47	7·47	...
Jullundur ...	615	...	...	1	...	...	1	...	...	...	...	1	1	...	...	...	...	...	...	...	4	...	...	6·50	6·50	...
Ferozepore ...	664	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...	1·51	1·51	...
Mooltan ...	539	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	1	...	3	...	...	5·57	5·57	...
Sealkote ...	384	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	3	...	...	7·81	7·81	...
Dhurmsalla (9 months) ...	666	...	...	1	...	1	...	...	...	...	...	2	...	...	...	...	1	...	...	...	5	...	...	7·51	7·51	...
Umritsur ...	...	...	...	1	...	1	...	...	2	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...
Meeau Meer ...	1,222	...	...	5	1	2	...	...	1	...	...	4	2	...	...	...	...	2	2	...	19	...	...	15·55	15·55	...
Rawul Pindee ...	1,621	...	2	1	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	5	...	...	3·08	3·08	...
Attock ...	116	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	8·62	8·62	...
Peshawur ...	3,779	...	2	17	2	...	1	3	4	...	...	7	...	...	...	1	1	2	...	...	40	...	...	10·58	10·58	...
	10,540	...	4	28	6	4	2	3	7	1	...	16	3	1	1	2	3	5	6	...	92	57	...	8·73	8·73	4·92
Troops on the march (8 months)	2,338	15	...	7	1	...	...	...	2	1	...	4	...	...	...	...	...	1	1	...	32	...	...	...	...	...
Bengal Presidency ...	32,129	91	9	97	33	11	6	40	44	9	5	37	6	10	6	3	9	15	42	...	473	213	2·83	11·89	14·72	6·02
Bhootan Field Force ...	5,084	113	...	75	27	...	2	87	46	2	3	13	1	3	3	42	8	38	5	12	480	127	22·23	72·18	94·41	25·00
Central India Force ...	3,887	34	...	11	3	...	1	2	2	...	1	1	...	3	...	...	...	3	3	5	69	...	8·75	9·00	17·75	...
Punjab Frontier Force ...	9,964	2	6	7	13	5	7	9	5	2	...	15	1	3	2	...	1	5	9	...	92	43	·20	9·03	9·23	3·04

* As far as ascertained: many Regimental death-rolls are incomplete in respect to deaths of men who have died while on furlough or sick leave.

NATIVE TROOPS, 1865.

XIV.

TABLE showing the prevalence of SMALL-POX and CHOLERA in each month, and the distribution of these Epidemics by STATIONS and PROVINCES.

STATIONS.	Average Strength for the period of Observation.	SMALL-POX. Number of Admissions into Hospital in each Month. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions of the Year.	Deaths of the Year.	Died per 1000 of Average Strength.
Fort William ...	643	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Alipore ...	644	...	1	...	...	...	...	...	...	...	...	...	...	1	...	
Barrackpore ...	778	...	...	...	...	1	...	...	...	...	...	...	...	1	...	
Dacca ...	466	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Cherra Poonjee ...	448	...	...	...	...	...	...	...	...	...	...	...	...	...	...	·00
Sylhet & Cachar ...	551	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Nowgong ...	88	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Debrooghur ...	569	...	...	1	4	...	...	...	...	...	...	...	...	5	...	
Bhaugulpore ...	358	...	...	...	1	...	...	...	...	...	...	...	...	1	...	
Dorundah ...	551	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Dinapore ...	626	2	...	1	2	1	...	...	...	...	...	...	...	6	...	
Segowlie ...	338	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Benares ...	595	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Goruckpore ...	620	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Fyzabad ...	705	...	...	3	3	3	...	...	...	...	...	...	...	9	1	
Lucknow ...	1569	3	5	2	1	...	...	...	...	...	...	...	2	13	2	·47
Seetapore ...	367	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Banda ...	372	...	...	...	1	2	...	...	...	...	...	...	...	3	...	
Cawnpore ...	573	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Allahabad ...	574	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Nagode ...	501	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Shahjehanpore ...	276	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Bareilly ...	824	...	...	2	1	2	...	...	...	...	...	...	1	6	1	
Almorah ...	563	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Deyrah ...	100	...	...	...	1	...	...	...	...	...	...	...	...	1	...	
Roorkee ...	516	...	...	...	...	...	...	...	...	...	...	...	...	...	...	·15
Moradabad ...	388	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Meerut ...	859	1	...	...	...	...	...	...	...	...	...	...	...	1	1	
Allyghur ...	...	...	...	...	...	2	...	...	...	...	...	...	...	2	...	
Delhi ...	589	...	...	...	2	...	...	...	...	...	...	...	...	2	...	
Agra ...	647	...	...	...	...	1	...	...	...	...	...	...	...	1	...	
Morar ...	1165	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Jhansi ...	921	...	...	...	...	...	...	...	...	...	...	...	1	1	...	
Nowgong ...	437	...	...	...	...	...	...	...	...	...	...	...	...	...	...	·00
Lullutpore ...	428	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Jubbulpore ...	109	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Erinpoora ...	107	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Deolee ...	279	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Umballa ...	937	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Jullundur ...	615	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ferozepore ...	664	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Mooltan ...	539	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Scalkote ...	384	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Dhurmsalla ...	666	...	...	...	...	...	...	...	...	...	...	...	...	...	...	·38
Umritsur ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Meean Meer ...	1222	1	...	...	1	...	...	...	...	...	...	...	...	2	...	
Rawul Pindee ...	1621	...	3	...	...	2	...	...	...	...	...	...	1	6	2	
Attock ...	116	...	...	...	...	1	...	...	...	...	...	...	...	1	...	
Peshawur ...	3779	6	...	...	1	...	...	...	...	...	...	...	...	7	2	
Troops on the march ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Bengal Presidency ...	32,129	13	9	9	18	15	...	...	...	...	...	...	5	69	9	·28
Bhootan Field Force ...	5084	...	...	...	1	...	...	...	...	...	...	...	...	1	...	...
Central India Force ...	3887	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...
Punjab Frontier Force ...	9964	1	...	...	1	5	4	1	2	...	...	1	1	16	6	·60

STATIONS.	CHOLERA. Number of Admissions into Hospital in each Month. January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total Admissions of the Year.	Deaths of the Year.	Died per 1000 of Average Strength.
Fort William ...	1	4	1	...	6	...	1	...	...	...	...	4	17	8	
Alipore ...	...	4	1	6	...	1	1	5	2	1	...	...	21	9	
Barrackpore ...	1	1	...	4	2	4	...	...	...	...	...	...	12	8	
Dacca ...	...	...	5	1	6	...	3	...	3	5	1	...	24	8	
Cherra Poonjee ...	...	...	...	...	1	1	...	...	...	...	...	...	2	...	9·20
Sylhet & Cachar ...	...	...	...	1	...	...	...	...	...	1	1	3	6	5	
Nowgong ...	...	...	...	...	...	2	...	...	...	...	...	...	2	2	
Debrooghur ...	...	...	...	2	...	3	...	...	...	...	...	...	5	2	
Bhaugulpore ...	...	...	...	...	...	1	...	2	...	...	...	...	10	5	
Dorundah ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Dinapore ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Segowlie ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Benares ...	...	...	...	...	...	2	...	...	...	1	1	...	4	2	
Goruckpore ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Fyzabad ...	...	...	...	...	...	...	...	2	5	...	...	...	7	6	
Lucknow ...	...	...	...	...	...	2	1	...	...	...	...	...	3	2	2·53
Seetapore ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Banda ...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	
Cawnpore ...	...	...	...	...	...	10	...	...	...	...	...	...	10	4	
Allahabad ...	...	...	...	...	...	...	...	...	...	1	...	...	1	...	
Nagode ...	...	...	...	...	1	1	...	...	...	...	...	...	3	2	
Shahjehanpore ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Bareilly ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Almorah ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Deyrah ...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	
Roorkee ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	·00
Moradabad ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Meerut ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Allyghur ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Delhi ...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	
Agra ...	...	...	...	...	...	...	...	1	8	...	...	...	9	7	
Morar ...	...	...	...	...	...	1	7	4	...	...	...	...	12	6	
Jhansi ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·18
Nowgong ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Lullutpore ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Jubbulpore ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Erinpoora ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Deolee ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Umballa ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Jullundur ...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	
Ferozepore ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Mooltan ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Scalkote ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Dhurmsalla ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	·00
Umritsur ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Meean Meer ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Rawul Pindee ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Attock ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Peshawur ...	...	...	...	...	...	...	...	...	...	1	7	...	32	15	...
Troops on the march ...	...	13	...	2	9	...	...	...	...	...	...	...	...	...	
Bengal Presidency ...	2	22	8	14	30	27	14	21	12	14	12	7	183	91	2·83
Bhootan Field Force ...	...	...	...	56	67	36	5	1	1	...	20	2	191	113	22·23
Central India Force ...	...	...	...	...	8	1	29	3	7	...	...	...	48	31	8·75
Punjab Frontier Force ...	...	...	...	3	1	1	...	...	1	...	...	...	6	2	·20

ABSTRACT of the ADMISSIONS and DEATHS of each REGIMENT of the NATIVE ARMY. 1—*REGIMENTS of EASTERN BENGAL and ASSAM, and of the BHOOTAN FIELD FORCE.*

REGIMENTS AND STATIONS.	Average Strength for the year.	Admitted into Hospital per cent. of the Average Strength.	Deaths of the year. In Hospital.	Deaths of the year. Out of Hospital.	Died per 1000 of the Average Strength.	Total Admissions into Hospital, and Deaths in Hospital, during the year.	Causes of Admissions into Hospital, and of Deaths in Hospital. Cholera.	Fevers.	Dysentery and Diarrhœa.	Ophthalmia.	Rheumatism.	Venereal affections.	Scurvy.	Anæmia and Debility.	Dropsy.	Phthisis Pulmonalis.	Apoplexy.	Mental affections.	Heart Disease.	Bronchitis and Asthma.	Pleurisy and Pneumonia.	Spleen Disease.	Hepatitis.	Diseases of the Digestive System.	Diseases of the Urinary System.	Diseases of the Generative System.	Scabies and Skin Diseases.	Abscess and Ulcer.	Injuries.	Punished.	All other Causes.
5th B. Cavalry ... Bhootan and Julpesh	439	366	18	18	82·00	Admitted ... 1,607	11	1,240	146	8	19	8	...	3	...	...	...	...	...	5	...	3	...	11	...	3	40	45	62	...	3
						Died ... 18	7	7	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14th B. ,, .. Bhootan ...	439	391	39	30	157·18	Admitted ... 1,716	10	1,079	405	6	23	7	38	16	...	...	...	2	...	49	4	1	5	11	1	...	5	18	27	...	9
						Died ... 39	9	9	19	..	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...
5th N. Infantry ... Sylhet and Cachar ...	532	198	29	28	107·14	Admitted ... 1,055	5	764	115	4	23	9	...	2	...	1	1	...	...	24	1	6	1	1	2	...	33	35	12	4	12
						Died ... 29	4	10	10	...	1	...	...	...	...	1	1	...	...	...	1	...	...	...	1	...	...	...	...	...	...
6th ,, ... Barrackpore ...	602	250	25	15	66·41	Admitted ... 1,503	16	683	332	10	41	20	12	5	...	...	1	...	2	13	5	...	...	12	...	1	30	119	44	3	151
						Died ... 25	9	4	8	...	1	...	...	...	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...
11th ,, ... Bhootan W. Dooars...	566	141	61	27	155·18	Admitted ... 2,496	18	1,976	247	7	34	3	8	1	...	...	1	...	...	7	2	...	...	8	2	...	41	84	50	...	4
						Died ... 66	8	29	21	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	...	...	...	1	5	...	...
12th ,, ... Bhootan and Tezpore	560	341	22	53	133·93	Admitted ... 1,912	36	885	631	3	33	13	1	71	7	1	...	...	...	17	2	3	...	20	1	...	23	42	73	18	29
						Died ... 61	21	8	22	...	...	...	...	4	1	1	...	...	...	...	..	1	...	...	...	...	...	...	3	...	...
17th ,, ... Dacca ...	437	189	16	25	93·82	Admitted ... 823	22	394	268	2	8	8	...	6	3	...	...	1	...	2	2	9	...	37	...	1	15	13	11	...	26
						Died ... 16	8	2	4	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...
18th ,, ... Bhaugulpore ...	680	262	25	9	50·00	Admitted ... 1,785	11	1,136	177	9	34	59	...	20	...	...	1	...	...	30	1	18	1	12	2	6	28	145	64	...	31
						Died ... 25	5	6	5	...	...	...	...	4	...	...	1	...	...	1	...	...	...	...	...	...	...	2	...	...	1
19th ,, ... Bhootan and Julpesh	691	161	14	12	37·63	Admitted ... 1,116	12	526	296	5	10	12	...	4	1	...	...	...	...	39	4	...	...	40	...	1	7	39	84	...	36
						Died ... 14	3	3	2	..	...	...	...	...	1	1	...	...	...	...	...	...	...	1	...	...	...	...	3	...	...
29th ,, ... Bhootan and Barrackpore	654	364	45	12	87·15	Admitted ... 2,383	33	1,193	823	7	39	21	2	1	...	...	2	...	...	15	1	3	1	27	1	...	4	88	113	2	7
						Died ... 45	21	4	13	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	1	4	...	...
30th ,, ... Bhootan and Cawnpore	568	203	16	*	...	Admitted ... 1,155	11	587	179	16	56	33	2	1	...	...	...	4	2	26	6	9	4	33	1	...	63	54	55	...	13
						Died ... 16	4	3	3	...	...	2	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	2	...	...
31st ,, ... Buxa and Dalimcote	621	361	79	7	138·49	Admitted ... 2,243	4	1,098	326	17	23	25	294	11	2	...	...	...	...	32	8	47	6	51	1	...	15	39	199	1	44
						Died ... 86	2	26	24	...	1	...	31	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...
34th ,, ... Fort William ...	665	174	18	6	36·09	Admitted ... 1,156	12	547	321	12	55	55	...	...	1	1	...	1	1	9	6	1	...	11	1	...	13	65	20	...	24
						Died ... 18	6	...	8	...	...	...	...	...	...	...	...	1	...	...	1	...	...	...	...	...	...	...	1	...	...	1
36th ,, ... Alipore ...	617	238	18	9	43·76	Admitted ... 1,467	22	744	373	6	65	19	6	1	...	...	...	1	...	11	4	...	1	17	...	2	38	43	83	...	31
						Died ... 18	9	5	3	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39th ,, ... Cherra Poonjee ...	644	174	7	9	24·84	Admitted ... 1,120	3	482	331	4	35	64	...	...	2	...	...	...	...	59	1	2	2	13	...	...	26	27	51	...	18
						Died ... 7	1	1	2	...	...	2	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
42nd ,, ... Upper Assam ...	679	205	20	8	41·24	Admitted ... 1,389	5	768	184	6	72	9	...	13	12	2	...	..	...	45	2	8	2	33	1	2	41	68	75	...	41
						Died ... 23	4	7	6	...	...	...	...	...	2	1	...	...	...	...	1	...	1	...	...	...	...	1	...	...	...
43rd ,, ... Gowhatty ...	336	178	21	...	62·50	Admitted ... 598	32	223	216	3	10	5	1	...	3	1	...	...	...	4	...	2	1	6	...	2	14	51	18	...	6
						Died ... 21	11	2	5	...	...	...	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
44th ,, ... Gowhatty and Bhootan	663	406	50	14	96·53	Admitted ... 2,689	19	1,846	416	7	39	24	12	4	4	...	...	...	...	17	2	5	2	6	...	3	28	183	41	...	31
						Died ... 50	14	12	14	...	...	..	...	1	...	...	...	...	...	3	1	1	...	...	...	...	...	...	2	...	2
3rd Goorkhas ... Buxa and Bhootan ...	689	240	20	4	34·83	Admitted ... 1,657	7	711	125	9	208	12	81	...	1	1	1	...	39	1	...	...	24	2	6	47	213	156	...	12
						Died ... 22	3	8	...	...	4	...	1	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	2	...	1
2nd, and 6th Co.'s Sappers Buxa and Bhootan...	135	391	2	5	51·85	Admitted ... 528	1	156	89	...	46	2	32	...	...	...	...	...	...	28	...	...	...	17	...	1	2	69	76	...	9
						Died ... 2	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Assam Local Artillery ... Debrooghur and Gowhatty ...	84	318	4	2	71·43	Admitted ... 292	2	165	58	...	16	1	...	5	2	...	...	...	...	...	...	...	...	1	...	1	1	20	11	...	9
						Died ... 2	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eurasian Artillery ... Gowhatty ...	63	448	...	1	15·87	Admitted ... 282	2	199	15	...	2	4	...	...	...	...	...	...	...	1	...	6	1	6	...	...	...	7	7	...	2
						Died	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Regiments of Lower Bengal, Bhootan, and Assam	11,364	273	549	294	74·18	Admitted ... 30,977	294	17,402	6,103	141	891	413	489	167	38	7	7	10	5	472	52	123	27	397	15	29	517	1,467	1,332	28	548
						Died ... 603	150	147	175	...	7	4	31	9	9	6	5	...	4	7	5	4	2	2	1	...	...	4	23	...	5

* Absent deaths not recorded.

NATIVE TROOPS, 1865.

XVI.

ABSTRACTS of the ADMISSIONS and DEATHS of each REGIMENT of the NATIVE ARMY. 2.—REGIMENTS of the BEHAR PROVINCES, OUDE, NORTH-WESTERN PROVINCES, and CENTRAL INDIA.

REGIMENTS AND STATIONS.	Average Strength of the year.	Admitted into Hospital per cent. of the Average Strength.	Deaths of the Year: In Hospital.	Deaths of the Year: Out of Hospital.	Died per 1000 of the Average Strength.	Total Admissions into Hospital and Deaths in Hospital during the year.	Causes of Admissions into Hospital, and of Deaths in Hospital.																								
							Cholera.	Fever.	Dysentery and Diarrhœa.	Ophthalmia.	Rheumatism.	Venereal Affections.	Scurvy.	Anæmia and Debility.	Dropsy.	Phthisis Pulmonalis	Apoplexy.	Mental Affections.	Heart Disease.	Bronchitis and Asthma.	Pleurisy and Pneumonia.	Spleen disease.	Hepatitis.	Diseases of the Digestive System.	Diseases of the Urinary System.	Diseases of the Generative System.	Scabies and Skin diseases.	Abscess and Ulcer.	Injuries.	Punished.	All other Causes.
15th N. Infantry ... Dumdah ...	693	73	7	...	10·10	Admitted 506	...	280	88	12	15	15	...	1	...	4	...	...	...	10	8	4	...	4	1	3	1	26	18	...	16
						Died 7	...	3	2	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16th N. Infantry ... Dinapore ...	663	77	3	7	15·08	Admitted 511	1	352	63	4	8	14	1	3	...	...	...	...	...	7	2	...	...	1	...	2	4	22	13	...	14
						Died 3	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17th Cavalry ... Segowlie ...	348	84	3	4	20·11	Admitted 294	2	103	34	5	19	34	...	...	1	...	...	...	...	5	2	...	3	11	2	...	6	22	37	...	8
						Died 3	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
14th N. Infantry ... Benares ...	606	157	9	4	21·29	Admitted 951	4	393	129	12	32	56	...	2	1	...	...	2	...	63	6	1	...	50	...	1	13	52	52	4	78
						Died 9	2	2	1	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	1
26th N. Infantry ... Gorruckpore ...	614	156	8	1	14·66	Admitted 960	...	423	241	17	26	37	...	2	...	2	1	1	...	36	5	4	1	20	4	2	12	75	22	...	29
						Died 8	...	1	1	...	...	...	...	1	...	2	1	...	...	...	...	...	1	...	...	...	...	...	...	...	1
9th N. Infantry ... Fyzabad ...	699	118	14	3	24·32	Admitted 826	11	313	273	7	30	49	...	...	...	...	...	...	...	5	4	...	3	24	1	1	9	49	18	...	29
						Died 14	8	...	3	...	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1
7th Cavalry ... Lucknow ...	451	163	4	7	24·39	Admitted 736	2	237	53	23	58	49	6	1	...	...	...	...	...	7	...	7	6	27	1	...	20	85	138	...	16
						Died 4	1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...
2nd N. Infantry ... Lucknow ...	597	106	4	2	10·05	Admitted 630	2	286	86	14	32	8	...	7	...	...	...	...	...	12	...	4	...	4	...	1	12	90	47	...	25
						Died 4	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1
33rd N. Infantry ... Lucknow ...	653	73	10	2	18·38	Admitted 478	2	190	52	16	19	5	2	...	...	...	...	...	...	...	...	1	...	12	1	4	32	101	25	...	16
						Died 10	1	5	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	2
8th Cavalry ... Seetapore ...	469	118	2	3	10·66	Admitted 552	...	208	51	10	44	22	...	...	...	...	...	...	...	4	3	...	2	8	5	2	17	50	119	...	7
						Died 2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...
40th N. Infantry ... Banda and Nowgong	648	254	9	8	26·23	Admitted 1614	1	1,129	82	8	25	34	...	27	...	...	...	...	...	20	3	22	2	25	...	9	26	112	49	...	70
						Died 9	...	4	2	...	...	...	...	...	...	...	...	...	...	1	...	1	...	...	...	...	...	...	...	...	1
1st Cavalry ... Nowgong and Jubbulpore ...	466	113	4	4	17·17	Admitted 528	...	251	45	8	34	15	...	...	1	...	...	...	...	3	6	1	...	15	2	5	5	52	76	...	9
						Died 4	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
38th N. Infantry ... Nagode* ...	480	226	28	7	72·92	Admitted 1083	18	515	137	5	40	88	...	5	...	...	1	...	...	8	5	10	1	5	3	...	49	112	55	...	26
						Died 28	10	4	3	...	1	2	...	...	...	...	...	...	...	1	2	1	...	...	...	...	...	...	2	...	2
7th N. Infantry ... Allahabad ...	702	92	7	1	11·40	Admitted 649	...	258	76	14	22	38	...	3	...	1	...	...	...	23	...	18	1	12	2	1	13	102	12	...	53
						Died 7	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	...	...	1	...	...	...
10th N. Infantry ... Shahjehanpore and Moradabad ...	668	112	2	1	4·49	Admitted 747	...	262	59	20	42	37	...	3	...	3	...	...	...	23	9	1	...	27	4	...	27	124	53	...	53
						Died 2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...
3rd Cavalry ... Bareilly ...	462	74	1	...	2·16	Admitted 341	...	182	15	6	11	5	...	...	1	...	...	...	...	1	1	...	...	15	...	...	9	24	61	...	10
						Died 1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
8th N. Infantry ... Bareilly ...	649	180	4	1	7·70	Admitted 1171	...	775	50	8	33	26	4	...	...	...	...	...	...	27	2	...	1	34	2	1	26	93	32	3	54
						Died 4	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	1	...	...	...	...	...	...	...	1
Sappers and Miners ... Roorkee ...	526	128	5	...	9·51	Admitted 672	1	260	45	13	40	20	1	1	...	1	...	...	...	19	5	11	...	16	1	1	33	87	82	2	33
						Died 5	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
4th Goorkhas ... Almorah ...	573	101	6	...	10·47	Admitted 576	...	250	28	19	28	32	...	3	...	1	...	...	...	8	1	5	1	34	...	7	10	53	59	1	36
						Died 6	...	1	...	...	1	...	...	1	...	1	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1
12th Cavalry ... Meerut and Delhi ...	468	145	3	...	6·41	Admitted 679	...	265	30	31	45	23	...	2	...	1	2	...	...	5	6	...	2	13	2	2	14	102	103	...	28
						Died 3	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
28th N. Infantry ... Meerut ...	572	101	2	4	10·49	Admitted 579	...	255	53	26	25	20	...	5	...	...	...	...	...	19	...	...	...	34	...	...	9	57	30	...	46
						Died 2	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
41st N. Infantry ... Allyghur and Agra ...	688	118	7	1	11·63	Admitted 810	1	395	121	12	20	58	...	2	1	1	...	...	...	9	2	7	...	6	...	1	31	92	26	...	25
						Died 7	...	2	2	...	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1
25th N. Infantry ... Delhi ...	679	97	8	4	17·67	Admitted 660	...	260	37	9	18	26	1	...	1	3	1	...	...	22	7	...	3	55	...	2	22	101	25	...	67
						Died 8	...	1	2	...	...	...	...	...	1	...	...	...	...	1	2	...	...	...	...	...	...	1	...	...	...
37th N. Infantry ... Agra ...	657	64	8	4	18·26	Admitted 422	1	161	51	12	20	40	2	...	...	...	...	2	...	7	1	...	1	2	...	3	17	45	18	...	30
						Died 8	...	5	...	...	1	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	...	...
16th Cavalry ... Morar ...	474	207	4	...	8·44	Admitted 978	1	425	89	20	38	59	4	9	...	...	1	1	...	41	1	...	2	10	2	5	25	81	149	...	5
						Died 4	1	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35th N. Infantry ... Morar ...	500	189	13	...	26·00	Admitted 943	7	433	154	7	15	39	...	...	...	...	...	...	...	...	...	4	...	3	...	...	74	119	85	...	3
						Died 13	5	7	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1st N. Infantry ... Lullutpore and Morar	702	203	9	1	14·24	Admitted 1422	1	1,018	61	10	47	26	1	16	...	1	1	...	...	20	8	22	...	16	...	...	14	102	21	...	37
						Died 9	1	3	1	...	1	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	1
15th Cavalry ... Jhansi ...	463	152	2	...	4·32	Admitted 705	...	468	46	11	27	14	...	...	2	...	...	...	...	2	...	...	1	8	...	...	6	34	81	...	5
						Died 2	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
4th N. Infantry ... Jhansi ...	618	114	10	5	24·27	Admitted 704	12	374	25	5	24	35	...	...	...	1	1	1	1	3	4	9	1	5	...	2	5	147	26	...	23
						Died 10	6	1	...	...	2	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...
2nd Cavalry ... Deolee and Erinpoora	459	129	1	1	4·36	Admitted 592	...	193	57	15	41	20	1	...	...	...	1	...	...	3	2	...	1	28	1	4	3	75	120	...	27
						Died 1	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Regiments of Behar, Oude, N. W. Provinces,						Admitted 22,349	67	10,914	2,331	382	887	644	23	92	8	19	9	7	1	412	93	141	32	524	34	59	544	2286	1652	10	888

XVII.

ABSTRACT of the ADMISSIONS and DEATHS of each REGIMENT of the NATIVE ARMY. 3.—REGIMENTS of the PUNJAB.

REGIMENTS AND STATIONS.	Average Strength for the year.	Admitted into Hospital per cent. of the average Strength.	Deaths of the year. In Hospital.	Deaths of the year. Out of Hospital.	Died per 1000 of the average Strength.	Total Admissions into Hospital and Deaths in Hospital during the year.	Causes of Admissions into Hospital and of Deaths in Hospital. Cholera.	Fevers.	Dysentery and Diarrhœa.	Ophthalmia.	Rheumatism.	Venereal Affections.	Scurvy.	Anæmia and Debility.	Dropsy.	Phthisis Pulmonalis.	Apoplexy.	Mental Affections.	Heart Disease.	Bronchitis and Asthma.	Pleurisy and Pneumonia.	Spleen Disease.	Hepatitis.	Diseases of Digestion.	Diseases of the Urinary System.	Diseases of the Generative System.	Scabies and Skin Diseases.	Abscess & Ulcer.	Injuries.	Punished.	All other Causes.
10th Cavalry ... Umballa & Jullundur	438	83	4	...	9·13	Admitted ... 362	1	133	31	24	14	22	...	1	...	...	...	...	...	3	2	2	...	11	...	...	13	46	17	1	11
						Died ... 4		1			1		...	1																	
22nd Native Infantry... Umballa ...	725	72	5	1	8·28	Admitted ... 522	...	179	51	11	38	27	...	7	...	...	...	...	...	6	3	...	...	44	2	6	11	55	33	...	49
						Died ... 5		2				1	...								1										1
45th Native Infantry... Jullundur ...	633	109	3	5	12·64	Admitted ... 686	...	400	24	11	26	16	...	6	...	...	1	...	...	22	3	1	...	30	1	1	10	78	36	...	20
						Died ... 3	...						...				1			1										1
32nd Native Infantry... Ferozepore ...	747	63	6	6	16·06	Admitted ... 467	...	155	25	57	8	27	...	1	...	3	...	...	...	42	5	...	1	30	2	...	14	63	16	2	46
						Died ... 6		2					...			1					3										
6th Cavalry ... Sealkote ...	390	125	5	...	12·82	Admitted ... 489	...	102	25	5	24	28	1	1	...	...	...	...	...	12	1	1	1	34	1	7	7	96	82	3	58
						Died ... 5	...	3	1				...											1							
1st Goorkhas ... Dhurmsalla * * ...	664	85	8	3	16·57	Admitted ... 568	3	292	62	18	25	14	...	7	...	...	...	...	...	3	7	...	2	18	4	1	4	53	38	...	17
						Died ... 8	2	3					...	1						1	1										
19th Cavalry ... Meean Meer ...	362	99	5	4	24·86	Admitted ... 359	...	157	23	8	8	12	...	...	...	...	...	...	...	4	...	...	...	19	...	5	4	38	62	...	19
						Died ... 5	...	2					...							1									1		1
3rd Native Infantry... Meean Meer* ..	698	231	6	...	8·60	Admitted ... 1610	...	874	58	6	163	7	4	...	...	...	...	...	...	75	11	1	...	51	...	1	6	191	70		92
						Died ... 6		2	1				1								2										
21st Native Infantry ... Meean Meer ...	585	96	10	1	18·80	Admitted ... 561	...	314	23	19	14	34	...	...	...	...	...	...	...	19	...	2	...	5	...	1	15	49	27	...	39
						Died ... 10	...	7					...							1									1		
11th Cavalry ... Mooltan ...	410	58	1	1	4·88	Admitted ... 237	...	67	22	7	2	6	4	...	...	2	...	...	...	8	...	...	...	8	...	...	2	41	57	...	11
						Died ... 1																							1		
18th Cavalry ... Rawul Pindee ...	372	50	1		2·70	Admitted ... 187	...	85	25	13	3	8	...	...	...	...	...	...	...	1	3	...	2	6	1	...	2	8	18	...	12
						Died ... 1																	1								
20th Native Infantry ... Rawul Pindee ...	694	79	1	2	4·32	Admitted ... 548	...	212	36	14	30	29	2	4	...	...	...	...	...	13	...	5	...	17	2	1	11	73	39	4	56
						Died ... 1																									1
2nd Goorkhas ... Rawul Pindee ..	667	98	4	3	10·49	Admitted ... 652	...	181	38	50	43	39	2	12	...	2	...	1	...	9	8	2	9	21	1	6	6	60	57	...	105
						Died ... 4		1				1				1															1
4th Cavalry ... Peshawur ...	378	125	10	...	26·46	Admitted ... 471	...	169	56	20	27	23	1	1	...	...	...	...	...	18	4	...	...	9	1	...	9	49	82	...	2
						Died ... 10		3	2				1							2	2										
9th Cavalry ... Peshawur ...	449	156	1	...	2·23	Admitted ... 701	...	298	88	13	28	15	...	3	...	...	...	...	1	10	6	1	...	11	1	7	9	47	161	...	2
						Died ... 1		1					...																		
13th Native Infantry ... Peshawur ...	667	241	9	15	35·98	Admitted ... 1607	...	974	275	13	22	32	...	25	...	...	1	...	...	14	10	4	...	25	1	9	11	122	26	1	42
						Died ... 9		4	1				...				1			1	1										1
23rd Native Infantry .. Peshawur ...	526	173	4	5	17·11	Admitted ... 916	...	595	52	46	20	32	...	7	...	...	...	...	...	14	...	...	1	13	5	1	7	94	18	...	10
						Died ... 4		3	1				...																		
24th Native Infantry ... Peshawur ...	708	128	5	5	14·12	Admitted ... 905	...	605	93	18	21	16	1	...	...	...	...	...	...	9	...	6	2	8	1	...	13	72	25	1	14
						Died ... 5		2	2				...																		1
27th Native Infantry ... Peshawur ...	701	153	10	8	25·68	Admitted ... 1075	...	814	67	17	23	14	...	9	...	...	...	...	...	15	4	2	1	21	1	2	3	54	13	...	15
						Died ... 10							...	1						1											
Sappers and Miners ... Peshawur ...	126	87	...	2	15·87	Admitted ... 109	...	74	5	1	5	8	...	...	...	...	...	...	...	...	...	...	...	2	...	...	1	7	4	...	2
						Died	...						...																		
Regiments of the Punjab ...	10,948	119	98	61	14·54	Admitted 13,026	4	6,650	1,079	371	544	409	15	84	...	7	2	1	1	297	67	27	19	383	24	48	158	1,296	906	12	622
						Died 93	2	44	5	..	1	2	2	3	...	2	2	.		8	11	..	1	3							7

* From Mooltan. * * The Admissions and Deaths from Cholera occurred while this Regiment was on the march to Bhootan.

The aggregate of the Admissions of the Native Army shown in the Monthly Statements is 66,976, and in the Annual Returns 66,352, while the Strength in the former is shown as 37,276, and in the latter as 39,551; the Strength given in the Annual Return includes Detachments which have furnished no Returns during the year, and which, therefore, show no Admissions.

The Total of the Deaths of the year shown in the General Death Table is 1,293, and in the Regimental Statements 1,274; in several instances the Annual Returns do not include the Deaths of men who have died absent from their Regiments, whose names are contained in the Nominal Death Roll.

NATIVE TROOPS, 1865.

XVIII.

ABSTRACT of the ADMISSIONS and DEATHS of each REGIMENT of the NATIVE ARMY. 4.—*REGIMENTS of the PUNJAB FRONTIER IRREGULAR FORCE.*

REGIMENTS AND STATIONS.	Average Strength of the Year	Admitted into Hospital per cent. of the average Strength.	Deaths of the Year. In Hospital.	Deaths of the Year. Out of Hospital.	Died per 1000 of the average Strength.	Total Admissions into Hospital and Deaths in Hospital during the year.	Causes of Admissions into Hospital and of Deaths in Hospital. Cholera.	Fevers.	Dysentery and Diarrhœa.	Ophthalmia.	Rheumatism.	Venereal Affections.	Guinea Worm.	Scurvy.	Anæmia and Debility.	Dropsy.	Phthisis Pulmonalis.	Apoplexy.	Mental Affections.	Heart Disease.	Bronchitis and Asthma.	Pleurisy and Pneumonia.	Spleen Diseases.	Hepatitis.	Diseases of the Digestive System.	Diseases of the Urinary System.	Diseases of the Generative System.	Scabies and Skin Diseases.	Abscess & Ulcer.	Injuries.	Punished.	All other Causes.
Artillery of Frontier Force ...	610	154	3	1	6·56	Admitted ... 941	...	362	100	18	28	27	1	...	3	1	...	...	...	...	10	12	1	2	48	2	...	15	124	137	4	46
						Died ... 3	...	1	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
1st Punjab Infantry Abbottabad ...	624	65	1	2	4·81	Admitted ... 404	...	150	42	6	16	24	6	...	...	...	...	...	1	...	14	6	...	...	7	...	..	9	53	25	1	24
						Died ... 1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
5th Goorkhas ... Abbottabad ...	615	90	8	2	16·26	Admitted ... 551	...	200	40	38	37	17	...	1	...	2	5	...	2	...	16	7	...	3	17	...	...	5	58	31	6	66
						Died ... 8	...	1	1	...	...	...	...	...	...	...	2	...	...	...	...	1	...	1	...	...	...	...	...	...	...	2
Guide Corps ... Murdan ...	794	125	4	3	8·82	Admitted ... 994	3	243	68	46	56	29	...	2	1	...	...	1	...	...	9	14	...	2	119	4	...	24	145	101	...	124
						Died ... 4	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
4th Sikh Infantry ... Peshawur ...	715	131	7	7	19·58	Admitted ... 937	1	475	138	13	58	20	1	3	8	...	1	1	...	...	13	8	1	4	19	...	...	8	83	36	2	44
						Died ... 7	...	...	1	...	...	...	...	...	...	1	...	1	...	...	1	3	...	...	...	...	...	...	...	...	...	...
5th Punjab Cavalry... Kohat ...	420	165	7	1	19·05	Admitted ... 691	...	313	43	7	5	8	2	...	10	1	...	1	...	...	20	2	4	1	22	1	...	12	99	114	...	29
						Died ... 7	...	2	1	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	1
4th Punjab Infantry Kohat ...	689	108	8	2	14·51	Admitted ... 743	2	325	45	11	36	11	9	2	6	...	2	...	...	...	30	22	4	1	37	1	2	11	96	41	1	48
						Died ... 8	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	3	...	...	2	...	...	...	...	...	...	1
5th Punjab Infantry Kohat ...	592	126	6	...	10·14	Admitted ... 749	...	501	31	18	7	18	2	1	2	...	...	...	...	...	8	3	...	1	14	...	2	4	52	39	...	46
						Died ... 6	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	2
3rd Sikh Infantry ... Kohat ...	605	138	1	...	6·61	Admitted ... 834	2	600	49	10	11	9	1	1	4	...	...	1	...	1	4	4	3	1	25	...	2	4	24	18	3	57
						Died ... 4	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
3rd Punjab Cavalry... Bunnoo ...	405	229	3	8	27·16	Admitted ... 928	...	525	82	6	29	10	8	...	...	...	...	...	...	...	4	2	...	...	27	1	3	10	106	105	...	10
						Died ... 3	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6th Punjab Infantry Bunnoo ...	701	149	6	4	14·26	Admitted ... 1,045	...	643	69	10	9	21	6	13	11	...	...	...	...	1	18	5	11	...	26	1	1	2	125	31	1	41
						Died ... 6	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...
4th Punjab Cavalry... Dera Ismail Khan	425	100	3	4	16·47	Admitted ... 426	...	167	18	5	12	11	4	...	6	...	...	...	...	...	26	11	11	1	14	2	1	8	52	67	1	9
						Died ... 3	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
2nd Punjab Infantry Dera Ismail Khan	715	60	3	...	4·20	Admitted ... 428	...	189	15	9	13	9	5	...	...	...	...	...	...	...	11	4	...	...	7	...	...	6	14	45	3	8
						Died ... 3	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...
3rd Punjab Infantry Dera Ismail Khan	709	90	6	4	14·10	Admitted ... 636	...	343	25	12	24	9	1	1	3	...	1	3	...	...	18	8	3	...	14	...	...	16	92	48	1	14
						Died ... 6	...	2	1	...	...	...	...	...	...	...	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...
1st Punjab Cavalry... Dera Ghazee Khan	471	74	1	3	8·49	Admitted ... 348	...	143	10	8	15	10	2	...	...	...	...	...	...	...	6	1	1	...	30	1	...	4	55	52	...	10
						Died ... 1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2nd Sikh Infantry ... Dera Ghazee Khan	614	88	5	3	13·03	Admitted ... 541	...	172	25	6	21	10	2	...	2	...	1	2	...	...	33	15	6	...	26	1	1	14	125	35	2	42
						Died ... 5	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	3	...	...	...	...	...	...	...	...	...	...
1st Sikh Infantry ... Mooltan ...	706	54	3	3	8·50	Admitted ... 384	...	147	11	8	25	18	4	...	...	...	2	...	2	...	5	2	1	2	10	2	4	8	61	29	...	43
						Died ... 3	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2nd Punjab Cavalry... Rajanpore ...	398	129	1	4	12·59	Admitted ... 513	...	179	22	12	23	13	1	...	1	...	...	...	...	...	10	...	...	...	34	1	1	5	86	111	...	14
						Died ... 1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Regiments of the Punjab Frontier Force	10,808	112	79	51	12·03	Admitted ... 12,093	8	5,677	833	243	425	274	55	24	57	4	12	9	5	2	255	126	46	18	516	17	17	165	1,540	1,665	25	675
						Died ... 79	2	21	12	...	...	...	...	...	1	2	3	4	...	...	3	13	...	2	5	...	...	...	...	2	...	1

5. REGIMENTS of the CENTRAL INDIA LOCAL and IRREGULAR CORPS.

Bhopal Battalion ... Schore ...	729	159	20	...	27·11	Admitted ... 1,012	10	453	79	39	40	55	8	3	11	...	...	...	...	...	27	13	2	...	43	...	...	18	91	81	...	36
						Died ... 20	5	...	5	...	...	...	...	1	...	...	...	...	...	3	1	...	...	...	...	...	...	...	...	...	...	3
2nd Regt. C. I. Horse Goonah ...	496	58	3	2	10·08	Admitted ... 289	...	139	15	7	16	21	...	1	1	...	...	...	...	...	2	...	3	1	4	...	4	1	29	38	...	7
						Died ... 3	...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...
1st Regt. C. I. Horse Augur ...	499	122	2	5	14·03	Admitted ... 609	...	178	57	15	14	33	6	2	...	...	...	1	...	...	63	1	3	...	32	2	1	13	66	92	...	30
						Died ... 2	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Malwa Bheel Corps... Sirdarpore ...	593	80	1	8	20·21	Admitted ... 472	9	140	69	4	32	8	28	1	7	...	...	...	...	...	4	1	1	...	18	1	1	5	51	17	...	34
						Died ... 4	2	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Meywar Bheel Corps Kherwarrah ...	704	104	22	6	39·77	Admitted ... 733	38	296	33	37	8	4	56	...	...	...	...	...	...	...	14	4	..	...	11	...	...	12	108	84	...	28
						Died ... 22	18	2	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...
Erinpoorah Force ... Erinpoorah ...	848	107	11	3	16·51	Admitted ... 910	1	261	31	42	25	75	19	...	5	...	1	...	...	...	19	2	2	1	78	1	...	17	173	144	...	10
						Died ... 11	...	7	...	...	1	...	...	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...
Deolee Force ... Deolee ...	878	74	1	2	3·42	Admitted ... 653	...	223	18	70	24	47	17	...	1	...	...	...	...	...	4	3	...	1	8	1	4	26	81	51	...	74
						Died ... 1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...
Local Corps of Central India ...	4,747	99	63	26	18·75	Admitted ... 4,678	58	1,690	305	255	159	243	131	7	25	..	1	1	...	...	133	24	11	3	194	5	10	92	602	507	...	219
						Died ... 63	25	11	9	...	5	..	...	1	1	...	...	...	...	...	3	2	1	...	2	...	...	...	1	1	...	3

* Six deaths from Small-pox.

3. JAIL POPULATION, 1865.

3. JAILS OF THE BENGAL PRESIDENCY, 1865.

I.

TABLE showing the SICKNESS and MORTALITY among the JAIL POPULATION of the BENGAL PRESIDENCY during the year 1865, *and the prevalence of the principal diseases in each month of the year.*

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per Cent. of Average Strength.	Number of Deaths.	Died per 1000 of Average Strength.	Causes of Deaths in Hospital.														
						Cholera.	Small-pox.	Fevers.	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.
January ...	52,705	1,750	3·32	197	...	1	2	63	...	40	36	...	...	9	...	12	5	...	10	3	16
February ...	52,885	1,788	3·38	163	...	5	1	48	6	27	30	2	2	10	1	6	7	...	5	2	11
March ...	52,811	1,819	3·45	225	...	7	5	75	2	34	47	2	2	16	2	3	2	1	13	3	11
April ...	53,026	2,020	3·81	286	...	81	8	75	3	35	35	1	1	15	...	8	2	...	5	1	16
May ...	52,877	1,976	3·74	272	...	43	4	87	5	37	56	2	...	10	1	3	2	...	5	6	11
June ...	53,876	1,740	3·23	217	...	23	1	57	14	25	40	2	1	14	3	10	3	...	15	4	5
July ...	54,898	1,797	3·28	261	...	98	...	22	8	46	36	1	3	6	2	8	2	1	17	2	9
August ...	56,147	2,002	3·57	291	...	39	1	50	4	56	72	1	2	8	...	6	1	1	29	4	17
September ...	56,426	2,152	3·81	318	...	20	...	48	3	71	99	1	5	10	1	6	5	...	28	3	18
October ...	55,909	2,195	3·93	352	...	41	...	66	4	91	67	2	4	21	1	5	5	3	20	3	19
November ...	55,968	2,064	3·69	298	...	32	...	48	4	86	57	1	3	13	2	3	2	1	27	1	18
December ...	54,593	1,759	3·22	253	...	1	1	51	1	78	60	1	2	10	2	2	5	1	16	4	18
						391	23	690	54	626	635	16	25	142	15	72	41	8	190	36	169
						Died per 1000 of the Average Strength.															
For the year ...	54,337	1,927	3·54	3,133	57·66	7·19	·42	12·71	·99	11·52	11·69	·29	·46	2·61	·28	1·32	·76	·15	3·50	·66	3·11

CAUSES OF ADMISSIONS.	Number of Admissions into Hospital in each Month.												Total Admissions during the Year.	Admitted per Cent. of Strength.	Died per Cent. of Admissions.
	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	5	8	35	198	88	52	189	81	56	97	46	3	858	1·58	45·69
Small-pox ...	79	51	21	31	14	7	...	1	3	3	4	9	223	·41	10·31
Fever, Intermittent ...	1,257	1,272	1,570	1,737	1,745	1,536	1,850	2,272	2,729	3,107	2,517	1,698	23,290	42·86	·73
„ Remittent ...	311	217	371	476	434	298	271	319	286	234	163	101	3,481	6·41	14·91
„ Continued ...															
Apoplexy ...	2	6	2	5	8	18	22	8	5	5	5	2	88	·16	61·36
Dysentery ...	345	261	406	429	414	367	471	598	672	551	497	396	5,407	9·95	10·81
Diarrhœa ...	290	355	542	625	552	538	634	763	695	488	442	331	6,255	11·51	
Hepatitis ...	2	7	6	2	5	7	6	7	9	5	2	8	66	·12	24·24
Spleen Disease ...	35	31	27	20	28	31	35	29	36	31	44	43	391	·72	6·39
Respiratory Diseases ...	166	142	145	149	166	106	112	113	96	140	137	163	1,635	3·01	8·68
Phthisis Pulmonalis ...	14	11	5	15	10	13	9	8	10	8	7	3	113	·21	63·72
Dropsy ...	10	16	12	16	17	7	13	9	14	10	15	16	155	·29	26·45
Atrophy and Anæmia ...	36	30	35	35	33	37	40	36	57	70	39	34	482	·89	39·42
Scurvy ...	16	11	13	13	20	18	47	61	42	28	35	36	340	·62	2·35
Rheumatism ...	157	160	160	133	144	130	119	155	137	149	124	120	1,688	3·11	
Venereal Diseases ...	84	99	82	109	112	104	126	114	114	95	95	75	1,209	2·23	
Eye Diseases ...	41	76	58	118	117	141	156	230	90	95	53	51	1,226	2·26	1·10
Abscess and Ulcer ...	435	497	535	523	578	620	853	687	577	570	436	442	6,753	12·42	
Wounds and Accidents	149	128	140	184	189	192	232	182	157	179	141	151	2,024	3·72	
All other Causes ...	611	605	701	655	632	605	561	565	590	467	449	579	7,020	12·92	
	4,045	3,983	4,866	5,473	5,306	4,827	5,746	6,238	6,375	6,332	5,252	4,261	62,704		
	Admitted per cent. of the Average Strength in each Month.														
	7·68	7·53	9·21	10·32	10·04	8·96	10·47	11·11	11·30	11·33	9·38	7·81	115·40		

JAILS OF THE BENGAL PRESIDENCY, 1865.

II.

TABLE showing the SICKNESS and MORTALITY among the JAIL POPULATION in LOWER BENGAL and in ASSAM during the year 1865, *and the prevalence of the principal diseases in each month of the year.*

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per Cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Death. Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Disease.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.
January ...	14,040	690	4·91	52	...	1	2	3	2	1	...	16	6	...	...	4	...	8	3	...	...	2	4
February ...	14,092	653	4·63	42	...	4	1	1	2	...	3	12	4	2	1	3	...	3	5	...	...	...	1
March ...	14,258	670	4·69	57	...	5	2	...	2	...	2	18	8	...	1	7	1	1	2	1	4	...	3
April ...	14,644	690	4·71	99	...	44	6	...	3	1	1	14	10	1	...	6	...	5	1	...	1	1	5
May ...	14,530	693	4·77	62	...	9	4	...	7	1	1	17	7	1	...	5	...	2	2	...	2	4	...
June ...	14,739	632	4·29	56	...	11	1	2	3	...	...	11	4	2	1	6	2	7	2	...	1	...	3
July ...	14,939	683	4·57	61	...	3	...	2	2	...	...	22	7	1	2	4	1	6	2	1	3	...	5
August ...	14,988	685	4·56	68	...	8	1	4	5	1	1	23	6	...	1	4	...	4	1	1	4	2	2
September...	14,915	689	4·62	61	..	5	...	2	3	1	...	19	11	1	3	4	1	3	2	...	...	...	6
October ...	14,887	727	4·89	117	...	32	...	2	7	2	2	26	10	2	2	10	1	3	4	1	3	...	10
November ...	14,778	724	4·90	105	...	25	...	6	1	...	2	32	16	...	2	6	1	2	2	...	3	...	7
December ...	14,359	699	4·87	79	...	1	...	7	3	1	1	36	14	...	1	3	1	1	3	...	3	1	3
						148	17	29	40	8	13	246	103	10	14	62	8	45	29	4	24	10	49
						Died per 1000 of the Average Strength.																	
For the year	14,598	686	4·70	859	58·85	10·15	1·17	1·99	2·74	·55	·89	16·82	7·06	·69	·96	4·25	·55	3·08	1·99	·27	1·64	·69	3·36

DISEASES.	Number of Admissions into Hospital in each Month. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total Admissions during the Year.	Admitted per Cent. of Strength.	Died per Cent. of Admissions.
Cholera ...	5	7	25	106	34	27	9	16	10	69	37	3	348	2·38	42·53
Small-pox ...	63	33	7	19	7	2	...	1	2	2	2	2	140	·96	12·14
Fever, Intermittent ...	562	460	588	511	641	754	1,026	1,034	1,020	1,080	1,005	775	9,456	64·78	·31
„ Remittent ...	38	33	45	56	87	48	66	56	49	47	45	37	607	4·16	7·91
„ Continued ...															
Apoplexy ...	1	3	2	2	3	...	...	1	...	2	3	1	18	·12	72·22
Dysentery ...	141	126	195	197	222	177	205	199	240	196	211	171	2,280	33·72	7·09
Diarrhœa ...	112	166	293	283	245	277	232	245	262	196	208	123	2,642		
Hepatitis ...	2	3	1	1	2	3	3	4	6	4	...	1	30	·21	33·33
Spleen Disease ...	26	17	20	11	20	22	24	20	25	19	32	25	261	1·79	5·36
Respiratory Diseases ...	58	64	67	64	89	56	63	61	37	58	50	64	731	5·01	8·48
Phthisis Pulmonalis ...	11	5	3	10	8	9	6	5	7	3	6	3	76	·52	59·21
Dropsy ...	9	13	9	13	14	5	11	8	9	6	12	16	125	·86	23·20
Atrophy ...	14	10	12	16	17	12	20	16	16	24	12	23	192	1·32	12·50
Scurvy ...	7	1	7	2	2	4	37	51	23	12	12	7	165	1·13	2·42
Rheumatism ...	94	79	76	83	77	72	56	65	57	78	44	50	831	5·69	
Venereal Diseases ...	32	39	31	40	38	30	34	31	36	24	37	31	403	2·76	
Eye Diseases ...	9	22	14	19	24	26	28	15	14	26	12	12	221	1·51	·98
Abscess and Ulcer ...	113	124	144	140	145	149	208	162	154	146	97	117	1,699	11·64	
Wounds and Accidents ...	41	42	49	66	47	43	50	54	46	47	38	36	559	3·83	
All other Causes ...	289	286	385	315	294	260	193	170	238	168	193	358	3,149	21·56	
	1,627	1,533	1,973	1,954	2,016	1,976	2,271	2,214	2,251	2,207	2,056	1,855	23,933		
	Admitted per cent. of the Average Strength in each Month.														
	11·59	10·88	13·14	13·34	13·87	13·41	15·20	14·77	15·09	14·83	13·91	12·92	163·95		

JAILS OF THE BENGAL PRESIDENCY, 1865.

III.

ABLE showing the SICKNESS and MORTALITY among the JAIL POPULATION in the DINAPORE, BENARES, OUDE, and CAWNPORE DISTRICTS during the year 1865, *and the prevalence of the principal diseases in each month of the year.*

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per Cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Death.																
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Disease.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anemia	Wounds and Accidents.	All other Causes.
January ...	15,591	388	2·49	43	...	...	...	3	...	...	...	12	20	...	...	1	...	1	1	...	...	1	4
February ...	15,693	433	2·76	45	...	1	...	2	2	...	...	13	19	...	...	2	1	1	...	...	...	2	2
March ...	15,817	429	2·71	62	...	...	2	2	5	...	...	10	30	2	1	3	...	1	...	...	1	2	3
April ...	15,727	504	3·21	81	...	18	2	4	3	...	2	15	23	...	...	2	...	2	1	...	1	...	8
May ..	15,696	461	2·94	78	...	5	...	...	13	...	...	15	38	...	...	3	...	1	...	...	...	...	3
June ...	16,132	416	2·58	76	...	...	...	9	16	...	6	9	21	...	...	3	1	...	1	...	6	2	2
July ...	16,348	462	2·83	73	...	17	...	1	11	...	...	14	19	...	1	...	...	...	..	...	8	1	1
August ...	16,698	602	3·61	137	...	5	...	9	18	...	2	21	54	1	...	...	...	...	...	...	19	1	7
September...	17,171	668	3·89	183	...	14	...	9	17	...	2	32	72	...	1	2	..	1	2	...	24	1	6
October ...	17,181	569	3·31	127	...	8	...	7	16	1	1	40	36	...	1	4	..	1	1	...	6	1	4
November ...	17,250	501	2·90	108	...	7	...	8	6	...	1	36	25	1	...	4	1	1	...	...	12	1	5
December ...	16,927	459	2·71	93	...	...	...	11	10	...	...	27	28	...	1	3	1	...	...	...	3	1	8
						75	4	65	117	1	14	244	385	4	5	27	4	9	6	...	80	13	53
						Died per 1000 of the Average Strength.																	
For the year	16,343	496	3·04	1,106	67·67*	4·59	·25	3·98	7·16	·06	·86	14·93	23·52	·25	·31	1·65	·25	·55	·37	...	4·90	·80	3·24

DISEASES.	Number of Admissions into Hospital in each Month.												Total Admissions during the Year.	Admitted per Cent. of Strength.	Died per Cent. of Admissions.
	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	...	1	1	55	2	1	37	21	43	26	9	...	196	1·20	38·26
Small-pox ...	4	3	12	11	6	4	..	...	1	...	2	5	48	·29	8·12
Fever, Intermittent ...	218	249	314	401	379	276	322	565	616	523	409	350	4,622	28·28	1·41
„ Remittent ...	16	25	20	61	62	89	71	77	98	70	32	25	646	3·95	18·27
„ Continued ...															
Apoplexy ..	...	...	...	3	1	9	...	6	2	2	1	...	24	·15	58·33
Dysentery ...	125	87	137	142	114	105	142	246	243	193	160	143	1,837	11·24	16·01
Diarrhœa ...	111	121	173	220	168	136	188	262	282	174	129	127	2,091	12·79	
Hepatitis ...	...	3	1	...	...	1	1	1	...	1	...	2	10	·06	40·00
Spleen Disease ...	2	4	4	3	3	3	3	2	6	4	6	7	47	·29	10·64
Respiratory Diseases ...	46	24	26	28	27	14	17	13	10	19	20	27	271	1·66	9·96
Phthisis Pulmonalis ...	...	2	...	3	...	...	1	2	1	3	...	...	12	·07	75·00
Dropsy ...	...	1	1	2	1	1	2	1	2	3	1	...	15	·09	40·00
Atrophy ...	6	4	2	2	2	8	6	7	27	23	12	3	102	·62	...
Scurvy ...	2	1	...	..	3	...	...	...	2	...	4	5	17	·10	...
Rheumatism ...	19	26	28	16	24	15	23	37	33	34	38	25	318	1·95	
Venereal Diseases ...	21	20	23	24	34	32	35	48	29	32	29	24	351	2·15	
Eye Diseases ...	11	39	31	67	49	70	92	167	24	31	12	16	609	3·73	
Abscess and Ulcer ...	143	168	144	141	132	146	215	167	122	122	114	121	1,735	10·62	1·39
Wounds and Accidents ...	60	43	48	54	52	60	92	60	55	65	54	78	721	4·41	
All other Causes ...	92	104	118	127	120	106	132	135	108	82	83	85	1,292	7·91	
	876	925	1,083	1,360	1,179	1,076	1,379	1,817	1,704	1,407	1,115	1,043	14,964		
	Admitted per cent. of the Average Strength in each Month.														
	5·62	5·89	6·85	8·65	7·51	6·67	8·44	10·88	9·92	8·19	6·46	6·16	91·36		

* This is an excessive and unfair death-rate for the Province. Owing to local causes, 466 deaths occurred in the Lucknow Jail alone; and if these be deducted from the total, the mortality for the rest of the Province is represented by a ratio of 46·64 per 1000.

JAILS OF THE BENGAL PRESIDENCY, 1865.

IV.

TABLE showing the SICKNESS and MORTALITY among the JAIL POPULATION in NAGPORE and CENTRAL INDIA during the year 186 *and the prevalence of the principal diseases in each month of the year.*

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per Cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Death.																	
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Disease	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Old Age.*	Wounds and Accidents.	All other Causes.	Died out of Hospital
January ...	5,366	246	4·58	29	...	...	...	...	6	...	...	8	2	...	...	3	...	1	...	...	6	...	3	.
February ...	5,386	262	4·86	18	...	...	...	...	5	4	...	...	5	...	...	1	...	...	...	...	2	...	1	.
March ...	5,212	278	5·33	41	...	2	1	...	3	17	...	2	5	...	...	1	...	1	...	...	6	...	3	.
April ...	5,170	296	5·72	45	...	18	...	...	3	12	...	3	...	...	1	4	...	1	...	...	3	...	...	.
May ...	5,238	258	4·93	49	...	28	...	3	2	2	2	1	6	...	...	...	...	...	...	...	2	1	2	.
June ...	5,171	241	4·66	34	...	12	...	...	2	1	1	2	8	...	...	1	...	...	...	...	6	1	...	.
July ...	5,058	257	5·08	96	...	70	...	2	...	1	...	7	6	...	...	1	1	...	...	...	5	...	3	
August ...	5,530	319	5·77	36	...	12	...	1	6	...	...	7	5	...	...	...	...	...	...	...	2	...	3	
September ...	5,275	354	6·71	48	...	1	...	1	11	...	...	13	8	...	1	4	...	...	1	...	4	1	3	.
October ...	5,096	412	8·08	63	...	...	...	3	14	...	...	13	14	...	...	3	...	1	...	2	8	2	3	..
November ...	5,137	333	6·48	48	...	...	...	3	11	1	...	8	9	...	1	1	...	...	...	1	11	...	2	..
December ...	4,962	245	4·94	40	...	...	...	1	8	...	...	12	8	...	...	4	...	...	...	1	3	...	3	..
						143	1	14	71	38	3	76	76	...	3	23	1	4	1	4	58	5	26	..
						Died per 1000 of the Average Strength.																		
For the year	5,221	290	5·55	547	104·77	27·39	·19	2·68	13·60	7·28	·57	14·56	14·56	...	·57	4·40	·19	·77	·19	·77	11·11	·96	4·98	..

DISEASES.	Number of Admissions into Hospital in each Month.												Total Admissions during the Year.	Admitted per Cent. of Strength.	Died per Cent. of Admissions
	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	...	...	9	36	51	22	129	17	2	1	...	...	267	5·11	53·56
Small-pox ...	12	13	1	...	...	...	...	...	...	...	...	...	26	·50	3·85
Fever, Intermittent ...	169	154	222	197	129	120	157	290	432	514	319	202	2,905	55·63	·48
„ Remittent ...	27	65	135	84	21	9	11	9	22	24	23	11	441	8·45	24·72
„ Continued ...															
Apoplexy ...	...	...	...	...	2	1	...	...	...	...	...	...	3	·06	100·00
Dysentery ...	29	19	35	32	27	35	70	70	73	46	44	31	511	22·31	13·05
Diarrhœa ...	31	37	46	51	54	43	134	102	41	46	38	31	654		
Hepatitis ...	...	...	1	...	...	2	1	...	...	...	...	3	7	·13	0
Spleen Disease ...	2	3	1	2	1	1	2	1	2	3	1	2	21	·40	14·29
Respiratory Diseases ...	16	9	18	16	9	9	10	11	18	22	23	33	194	3·72	11·86
Phthisis Pulmonalis ...	1	1	1	1	...	...	...	...	...	1	...	...	5	·10	80·00
Dropsy ...	...	1	1	1	1	1	...	...	2	...	...	...	7	·13	14·29
Atrophy ...	7	9	7	5	2	8	10	6	9	10	2	2	77	1·48	0
Scurvy ...	1	2	1	1	6	5	3	3	7	8	9	13	59	1·13	6·78
Rheumatism ...	17	27	24	18	16	24	17	22	23	15	22	23	248	4·75	
Venereal Diseases ...	11	10	9	12	10	10	17	8	11	10	10	6	124	2·38	
Eye Diseases ...	5	6	1	8	8	7	12	20	20	16	8	4	115	2·20	
Abscess and Ulcer ...	80	88	123	136	150	165	154	163	158	174	116	107	1,614	30·91	·37
Wounds and Accidents ...	16	24	13	21	35	40	26	20	18	27	15	11	266	5·10	
All other Causes ...	111	103	71	68	65	77	77	89	62	76	78	53	930	17·81	
	535	571	719	689	587	579	830	831	900	993	708	532	8,474		
	Admitted per cent. of the Average Strength in each Month.														
	9·97	10·60	13·80	13·33	11·21	11·20	16·41	15·03	17·06	19·49	13·78	10·72	162·30		

* Chiefly very old men of the Jubbulpore Thuggee Jail.

JAILS OF THE BENGAL PRESIDENCY, 1865.

V.

TABLE showing the SICKNESS and MORTALITY among the JAIL POPULATION in the AGRA, MEERUT, and ROHILCUND DISTRICTS during the year 1865, *and the prevalence of the principal Diseases in each month of the year.*

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Deaths.																
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.
January ...	7754	109	1·41	14	...	...	...	...	4	...	...	2	3	...	...	...	...	2	...	...	2	...	1
February ...	7673	111	1·44	12	...	...	...	..	2	...	1	1	1	...	...	1	..	2	1	...	3	...	...
March ...	7593	121	1·59	18	...	...	...	1	4	1	...	4	3	...	...	3	...	...	...	...	1	...	1
April ...	7678	137	1·78	17	...	...	...	1	11	1	...	...	...	...	...	3	...	...	...	...	...	...	1
May ...	7661	159	2·08	26	...	...	...	...	8	5	1	2	3	...	...	1	1	...	...	...	1	...	4
June ...	7792	162	2·08	34	...	...	...	...	14	...	5	2	5	...	...	4	...	2	...	...	2	...	...
July ...	7869	150	1·91	16	...	7	...	...	1	1	...	2	3	...	...	...	...	1	...	...	1	...	...
August ...	7922	164	2·07	33	...	14	...	...	2	1	1	3	5	...	...	...	...	1	...	...	3	...	3
September ...	7835	168	2·14	17	...	...	...	1	1	1	...	4	7	...	...	...	...	1	...	...	...	1	1
October ...	7597	169	2·22	27	...	1	...	2	3	4	...	8	5	...	...	1	...	...	...	...	1	...	2
November ...	7585	149	1·96	22	...	...	...	1	1	4	...	9	2	...	...	2	...	...	...	..	...	...	3
December ...	7324	107	1·46	19	...	...	...	1	...	4	...	1	7	...	...	...	...	...	...	...	2	2	2
						22	...	7	51	22	8	38	44	...	...	15	1	9	1	...	16	3	18
						Died per 1000 of the Average Strength.																	
For the year...	7693	144	1·87	255	33·15	2·86	...	·92	6·63	2·86	1·04	4·94	5·72	...	...	1·95	·13	1·17	·13	...	2·08	.39	2·33

DISEASES.	Number of Admissions into Hospital in each Month.												Total Admissions during the year.	Admitted per cent. of Average Strength.	Died per cent. of Admissions.
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	...	...	...	1	...	...	13	27	...	1	...	...	42	·55	52·38
Small-pox ...	...	2	1	1	...	1	...	...	...	...	...	...	5	·07	...
Fever, Intermittent ...	47	54	68	107	113	87	80	110	159	193	96	48	1162	15·10	·60
,, Remittent ...	33	33	74	139	150	119	98	155	94	71	39	20	1025	13·33	7·12
,, Continued ...							4								
Apoplexy ...	...	1	...	...	1	4	4	1	...	...	...	...	11	·14	72 73
Delirium Tremens ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dysentery ...	11	13	15	11	13	14	19	44	51	72	41	24	328	4·26	10·12
Diarrhœa ...	15	17	14	30	39	37	51	105	74	42	32	26	482	6·26	
Hepatitis ...	...	...	...	...	1	1	1	...	1	...	1	...	5	·07	...
Spleen Disease ...	2	1	...	2	...	...	...	3	1	...	1	1	11	·14	...
Respiratory Diseases ...	24	21	21	14	28	17	13	9	15	23	22	20	227	2·95	6·61
Phthisis Pulmonalis ...	2	3	1	...	2	4	...	1	...	...	...	...	13	·17	69·23
Dropsy ...	1	...	...	...	...	...	...	...	...	...	...	...	1	·01	...
Atrophy and Anæmia ...	5	3	2	1	2	4	2	2	1	3	3	1	29	·38	55·17
Scurvy ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rheumatism ...	13	11	16	8	11	8	8	14	5	6	9	7	116	1·51	
Venereal Diseases ...	8	17	9	12	12	15	24	15	16	18	10	6	162	2·11	
Eye Diseases ...	5	7	2	5	11	13	9	11	19	7	10	4	103	1·34	
Abscess and Ulcer ...	42	51	47	40	51	57	84	50	52	52	42	33	601	7·81	1·29
Wounds and Accidents ...	14	12	18	19	30	27	34	20	20	24	14	12	244	3 17	
All other causes ...	52	31	34	45	50	50	36	47	41	34	30	31	481	6·25	
	274	277	322	435	514	458	476	614	549	546	350	233	5048		
	Admitted per cent. of the Average Strength in each Month.														
	3·53	3·62	4·28	5·66	6·71	5·88	6·05	7·75	7·01	7·19	4·61	3·18	65·62		

JAILS OF THE BENGAL PRESIDENCY, 1865.

VI.

TABLE showing the SICKNESS and MORTALITY among the JAIL POPULATION in the PUNJAB during the year 1865, *and the prevalence of the principal Diseases in each month of the year.*

MONTHS.	Average Strength.	Average number daily sick.	Number daily sick per cent. of Strength.	Number of Deaths.	Died per 1000 of Strength.	Causes of Deaths.																
						Cholera.	Small-pox.	Fever, Intermittent.	Fever, Remittent.	Fever, Continued.	Apoplexy.	Dysentery.	Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Disease.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy and Anæmia.	Wounds and Accidents.	All other Causes.
January ...	9,954	317	3·18	59	...	...	...	8	34	2	...	2	5	...	...	1	...	...	1	...	2	...	4
February ...	10,041	329	3·27	46	..	...	...	8	22	...	2	1	1	...	1	3	...	...	1	...	...	...	7
March ...	9,931	321	3·23	47	...	...	...	13	18	9	...	...	1	...	...	2	1	...	...	...	1	1	1
April ...	9,807	393	4·01	44	...	...	...	4	11	21	...	3	3	...	...	...	...	...	...	...	...	...	2
May ...	9,752	405	4·15	57	...	1	...	9	26	11	1	2	2	1	...	1	...	...	...	...	...	1	2
June ...	10,042	289	2·88	17	...	...	...	4	3	3	2	1	2	...	...	...	...	1	...	...	...	1	...
July ...	10,684	245	2·29	15	...	1	...	...	1	...	8	1	1	...	...	1	...	1	...	...	...	1	...
August ...	11,009	232	2·11	17	...	...	...	1	...	2	...	2	2	...	1	4	...	1	...	...	1	1	2
September ...	11,230	273	2·43	9	...	...	...	1	...	...	1	3	1	...	...	...	...	1	...	...	...	...	2
October ...	11,148	318	2·85	18	...	...	...	1	1	3	1	4	2	...	1	3	...	...	...	...	2	...	...
November ...	11,218	357	3·18	15	...	...	...	3	2	1	1	1	5	...	...	...	...	...	...	...	1	...	1
December ...	11,021	249	2·26	22	...	...	1	4	...	1	...	2	3	1	...	...	...	1	2	...	5	...	2
						2	1	56	118	53	16	22	28	2	3	15	1	5	4	...	12	5	23
						Died per 1000 of the Average Strength.																	
For the year.	10,482	311	2·97	366	34·92	·19	·10	5·34	11·26	5·06	1·53	2·10	2·67	·19	·28	1·43	·10	·48	·38	...	1·14	·48	2·19

DISEASES.	Number of Admissions into Hospital in each Month.												Total Admissions during the year.	Admitted per cent. of Average Strength.	Died per cent. of Admissions.
	Jan.	Feb.	March	April	May	June	July	Augt.	Sept.	Oct.	Nov.	Dec.			
Cholera ...	...	...	...	...	1	2	1	...	1	...	...	...	5	·05	40·00
Small-pox ...	...	...	...	...	1	...	...	...	...	1	...	2	4	·04	25·00
Fever, Intermittent ...	261	355	378	521	483	299	265	273	502	797	688	323	5,145	49·09	1·09
„ Remittent ...	197	61	97	136	114	33	25	22	23	22	24	8	762	7·27	22·44
„ Continued ...															
Apoplexy ...	1	2	...	...	1	4	18	...	3	1	1	1	32	·31	50·00
Delirium Tremens ...	...	...	...	...	...	...	...	...	...	...	...	...	.....	.....	.....
Dysentery ...	39	16	24	47	38	36	35	39	65	44	41	27	451	4·30	5·90
Diarrhœa ...	21	14	16	41	46	45	29	49	36	30	35	24	386	3·68	
Hepatitis ...	...	1	3	1	2	...	...	2	2	...	1	2	14	·13	14·29
Spleen Disease ...	3	6	2	2	4	5	6	3	2	5	4	9	51	·49	5·88
Respiratory Diseases ...	22	24	13	27	13	10	9	19	16	18	22	19	212	2·02	7·08
Phthisis Pulmonalis ...	...	...	...	1	...	...	2	...	2	1	1	...	7	·07	71·43
Dropsy ...	...	1	1	...	1	...	...	...	1	1	2	...	7	·07	57·14
Atrophy and Anæmia ...	4	4	12	11	10	5	2	5	4	10	11	4	82	·78	14·63
Scurvy ...	6	7	5	10	9	9	7	7	10	8	10	11	99	·94	.....
Rheumatism ...	14	17	16	8	16	11	15	17	19	16	11	15	175	1·67	
Venereal Diseases ...	12	13	10	21	18	17	16	12	22	11	9	8	169	1·61	
Eye Diseases ...	11	2	10	19	25	25	15	17	13	15	11	15	178	1·70	
Abscess and Ulcer ...	57	66	77	66	100	103	192	145	91	76	67	64	1,104	10·53	·96
Wounds and Accidents ...	18	7	12	24	25	22	30	28	18	16	20	14	234	2·23	
All other Causes ...	67	81	93	100	103	112	123	124	141	107	65	52	1,168	11·14	
	733	677	769	1,035	1,010	738	790	762	971	1,179	1,023	598	10,285		
	Admitted per cent. of the Average Strength in each Month.														
	7·36	6·74	7·76	10·56	10·36	7·35	7·39	6·92	8·65	10·58	9·12	5·42	98·12		

VII.

COMPARATIVE STATEMENT of the ratios of SICKNESS and MORTALITY among the JAIL POPULATION in the various Provinces of the BENGAL PRESIDENCY, for the year 1865.

DISEASES.	BENGAL PROPER & ASSAM. Average Strength, 14,598; Daily sick per cent. of Strength, 4·70; Admitted per cent. of Strength, 163·95; Died per 1000 of Strength, A. Cholera, 10·15; B. All Causes, 58·85			DINAPORE, BENARES, OUDE & CAWNPORE DISTRICTS. Average Strength, 16,343; Daily sick per cent. of Strength, 3·04; Admitted per cent. of Strength, 91·56; Died per 1000 of Strength, A. Cholera, 4·59; B. All Causes, 67·67			NAGPORE & CENTRAL INDIA. Average Strength, 5,221; Daily sick per cent. of Strength, 5·55; Admitted per cent. of Strength, 162·30; Died per 1000 of Strength, A. Cholera, 27·39; B. All Causes, 104·77			AGRA, MEERUT & ROHILKUND DISTRICTS. Average Strength, 7,693; Daily sick per cent. of Strength, 1·87; Admitted per cent. of Strength, 65·62; Died per 1000 of Strength, A. Cholera, 2·86; B. All Causes, 33·15			PUNJAB. Average Strength, 10,482; Daily sick per cent. of Strength, 2·97; Admitted per cent. of Strength, 98·12; Died per 1000 of Strength, A. Cholera, ·19; B. All Causes, 34·92			BENGAL PRESIDENCY. Average Strength, 54,337; Daily sick per cent. of Strength, 3·54; Admitted per cent. of Strength, 115·40; Died per 1000 of Strength, A. Cholera, 7·19; B. All Causes, 57·66		
	Admitted per cent. of average Strength.	Died per cent. of Admissions.	Died per 1000 of average Strength.	Admitted per cent. of average Strength.	Died per cent. of Admissions.	Died per 1000 of average Strength.	Admitted per cent. of average Strength.	Died per cent. of Admissions.	Died per 1000 of average Strength.	Admitted per cent. of average Strength.	Died per cent. of Admissions.	Died per 1000 of average Strength.	Admitted per cent. of average Strength.	Died per cent. of Admissions.	Died per 1000 of average Strength.	Admitted per cent. of average Strength.	Died per cent. of Admissions.	Died per 1000 of average Strength.
Cholera ...	2·38	42·53	10·15	1·20	38·26	4·59	5·11	53·56	27·39	·55	52·38	2·86	·05	40·00	·19	1·58	45·69	7·19
Small-pox ...	·96	12·14	1·17	·29	8·12	·25	·50	3·85	·19	·07	...	...	·04	25·00	·10	·41	10·31	·42
Fevers* ...	68·94	·77	5·28	32·23	3·47	11·20	64·08	3·68	23·56	28·43	3·66	10·41	56·36	3·84	21·66	49·27	2·58	12·71
Dysentery & Diarrhœa	33·72	7·09	23·88	24·03	16·01	38·45	22·31	13·05	29·12	10·52	10·12	10·66	7·98	5·90	4·77	21·46	10·81	23·21
Hepatitis ...	·21	33·33	·69	·06	40·00	·25	·13	...	...	·07	...	...	·13	14·29	·19	·12	24·24	·29
Spleen Disease ...	1·79	5·36	·96	·29	10·64	·31	·40	14·29	·57	·14	...	...	·49	5·88	·28	·72	6·39	·46
Ophthalmia ...	1·51	...	...	3·73	...	...	2·20	...	...	1·34	...	...	1·70	...	...	2·26	...	...
Rheumatism ...	5·69	...	...	1·95	...	...	4·75	...	...	1·51	...	...	1·67	...	...	3·11	...	...
Scurvy ...	1·13	2·42	·27	·10	...	...	1·13	6·78	·77	...	...	...	·94	...	...	·62	2·35	·15
Dropsy ...	·86	23·20	1·99	·09	40·00	·37	·13	14·29	·19	·01	...	·13	·07	57·14	·38	·29	26·45	·76
Atrophy & Anœmia ...	1·32	12·50	1·64	·62	...	4·90	1·48	...	11·11	·38	55·17	2·08	·78	14·63	1·14	·89	39·42	3·50
Phthisis Pulmonalis ...	·52	59·21	3·08	·07	75·00	·55	·10	80·00	·77	·17	69·23	1·17	·07	71·43	·48	·21	63·72	1·32
Apoplexy ...	·12	72·22	·89	·15	58·33	·86	·06	100·00	·57	·14	72·73	1·04	·31	50·00	1·53	·16	61·36	·99
Respiratory Diseases ...	5·01	8·48	4·25	1·66	9·96	1·65	3·72	11·86	4·40	2·95	6·61	1·95	2·02	7·08	1·43	3·01	8·68	2·61
Venereal Diseases ...	2·76	...	...	2·15	...	...	2·38	...	...	2·11	...	...	1·61	...	...	2·23	...	...
Abscess & Ulcer ...	11·64	...	...	10·62	...	...	30·91	...	...	7·81	...	...	10·53	...	...	12·42	...	...
Injury ...	3·83	...	·69	4·41	...	·80	5·10	...	·96	3·17	...	·39	2·23	...	·48	3·72	...	·66
All other Causes ...	21·56	·98	3·91	7·91	1·39	3·49	17·81	·97	5·17	6·25	1·29	2·46	11·14	·96	2·29	12·92	1·10	3·59
	163·95	...	58·85	91·56	...	67·67	162·30	...	101·77	65·62	...	33·15	98·12	...	34·92	115·40	...	57·66

* Jail Fever in the Raipore, Nagpore, Jubbulpore, Bareilly, Sirsa, Umballa, Umritsur, Lahore, Goojerat, Googaira, Peshawur, and Bunnoo Jails. The mortality from fever in these Jails amounted to 350, exclusive of deaths from the sequelæ of the disease.

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VIII.

TABLE showing the GENERAL STATISTICS of SICKNESS and MORTALITY in the JAILS of the BENGAL PRESIDENCY and the Average Number daily sick per cent. of Strength in each month.

STATIONS.	Average Strength for the Year.	Daily sick per cent. of Average Strength in each month.												Daily sick per cent. of average Strength for the year.	Admitted into Hospital per cent. of average Strength.	Died per 1000 of average Strength.		
		Jan.	Feb.	Mar.	Apl.	May.	June.	July.	Aug	Sept.	Oct.	Nov.	Dec.			A. Cholera.	B. Sudden Deaths out of Hospital.	C. All Causes.
Alipore ...	1811	4 58	4·87	4·91	4·51	4·57	4·22	5·00	5·81	5·24	5·96	5·90	5·92	5·14	233·90	13 80	...	70·13
Baraset ...	102	9·09	8·11	6·49	4·00	4·11	2·17	3·82	4 43	6·04	8·62	11·76	6·60	5 88	204·90	29·41	...	78·43
Jessore ..	534	5·36	3·70	3·02	3·94	4 79	1 18	2·24	4·17	5·29	5·08	6·31	4·48	4·12	143·45	...	...	37·45
Kishnaghur ...	333	3·68	3 94	4·28	3·42	2 62	1·89	2 55	2·97	3·74	3·18	3·00	3·22	3·30	69·07	3·00	...	30·03
Moorshedabad ...	204	6·92	4·91	5·98	5·77	5·41	6·06	4·65	4 52	7·33	12·50	13·43	10·36	7·35	140·20	...	...	13·24
Howrah ...	152	5·93	4·38	3·82	3·77	3·61	3·94	4 14	3 82	5·15	4·23	4·80	3·53	4 61	56·58	6·58	...	85·53
Hooghly ..	578	6 54	5·13	6·80	7·90	5·94	4·27	4·12	6·57	5 45	6 96	7·81	6·66	6·23	258·48	10·38	...	41·52
Burdwan ...	487	3·97	3·39	2·90	2·32	2·94	2·44	3·08	3·41	3·46	2·89	3·68	4·19	3·28	135 32	...	...	34·91
Bancoorah ...	480	·86	2·80	3·98	2·71	2·13	1·47	1·03	1·25	1·02	1·21	1·22	1·16	1·67	62·08	16·67	...	29 17
Purulea ...	174	...	1·28	·66	56	1·21	2·05	1·14	1·12	1·06	1·44	·87	·60	1·15	59·77	...	...	11 49
Raneegunge ...	28	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	..
Sooree ...	245	2·29	3·59	1·59	1·48	3·11	3·05	2·99	1·86	2·55	4·17	3·59	1·56	2 45	75·51	...	...	28·57
Rajmchal ...	136	2·05	2·88	3·77	5·63	4·80	8·85	5·31	4·67	4·63	3 31	2 27	3·70	4·41	188·97	29 41	...	51·47
Deoghur ...	79	7·95	6·10	8·06	4·35	3·03	4·21	1·04	2·13	2·13	6·78	7·14	4·11	5·06	132·91	12·66	...	63·29
Malda ...	55	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dinagepore ...	443	5·14	4·62	4·28	5·17	4·04	3 64	3·33	3·57	4·66	3·63	4·67	3·70	4·29	165·01	4·51	...	94·81
Rampore Bauleah ...	425	2·02	2·24	4·06	4·27	4·16	4 43	5 84	5·45	5·74	6·28	7·43	7·18	4·94	131·53	...	...	30·59
Rungpore ...	355	7·12	5·75	6·15	6 37	6·63	6·18	6·46	5·95	4·27	3·58	4·17	5·48	5·63	161 41	...	...	92 94
Bograh ...	124	5·56	4·63	4·88	7 09	5·67	6·47	7·09	7·75	9·37	7·14	7·89	8·26	7·26	207·26	...	...	32·26
Mymensingh ...	418	5·69	5·80	7·35	5 94	4 02	2·89	3·41	3·99	2·04	2·52	2·58	5·56	4·31	143 06	4·78	...	71·77
Pubna ...	136	2·42	3·97	3·97	3·23	5·26	5·15	5·51	3·47	4·72	5 07	8 70	4·73	4 41	287·50	22·06	...	117·65
Furreedpore ...	436	5·49	4·50	3·93	3·43	2·55	2·56	3·90	3·50	3·39	3·14	4 27	4·77	3·90	136 01	...	...	34·40
Backergunge ...	407	5·24	5·99	4·95	4·57	3·96	3·82	4·80	4·80	4 78	5 37	5·37	6·05	4·91	144·72	2·46	...	44·22
Noacolly ...	173	4·95	6·25	6·44	7·78	8·84	7·30	8·43	6·11	6·76	8·00	9·22	7·01	6·94	288 44	...	...	17·34
Chittagong ...	304	3·08	2·09	1·95	2·12	2 99	4·15	3·40	3·11	1·99	1 90	2·39	2·46	2·63	86 18	6·58	...	19·74
Tipperah ...	374	1·54	1·48	1·95	1·79	2·38	2·71	3·62	3·31	3·65	2·67	2 20	2·20	2·41	119·25	...	..	16·04
Dacca ...	474	8·00	6·72	6·26	6·33	5·87	5·10	5·30	5·98	5·23	4·82	5 84	5·01	5·91	121·73	...	...	25·32
Sylhet ...	403	3·11	3·12	3·52	3·48	3·75	5 06	5·57	4·25	2·69	4·49	4·20	1·80	3·72	186·85	7·44	...	69·48
Cachar ...	226	6·91	8·80	9·46	9 88	12·79	11·37	11 57	7 34	13 62	13·58	12 62	6 60	10·62	281·86	106·19	...	234 51
Gowalparah ...	140	3·76	3·90	6·21	8·23	12·08	9·72	8·27	7·09	7·03	7·30	2·99	6·84	7·14	290·00	...	...	85·71
Gowhatty ...	154	3 15	1·52	2·38	8·82	6 92	14·60	11·32	7·48	7 74	10·12	9·74	9·03	7·79	329·22	71·43	...	272·73
Seebsagur ...	81	·99	...	2·08	1·92	5·08	2·82	2·74	2 17	4·27	3·45	4 04	1·02	2·47	134·57	...	...	123·46
Nowgong ...	43	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	..
Tezpore ...	214	...	...	...	...	...	...	...	...	...	...	...	...	...	...	42·06	...	102·80
Debrooghur ...	122	3·64	4·07	2·81	4·71	6·77	6·17	6 22	3·41	4·08	3 24	3 41	3 49	4·21	137·38	...	...	106·56
Midnapore ...	616	4·32	2·90	1·36	3·85	3·68	4·46	5·56	8·93	8 93	8·57	4 76	3·00	4·92	184·43	...	...	56·82
Balasore ...	227	3·58	3·53	5·72	5 48	9·24	5·71	6·19	6·32	5·51	3·20	4·19	13·25	6·01	155·52	...	...	8·81
Cuttack ...	398	2 55	4·71	4·64	4·13	4·27	5·83	5·09	1·35	2·70	5·16	4·53	4·55	3·96	171·37	...	...	40·20
Pooree ...	77	3·36	2·78	3·92	4·91	4·88	3·48	3·56	4·69	5·22	3·50	3·18	3·05	3·77	132·16	...	...	77·92
Sumbulpore ...	148	3·45	5·77	10·53	7·14	5·00	5·20	5·41	2·70	5·06	2·67	1·82	1·12	3·90	144 16	38·96	...	33·78
Chyebassa ...	142	13·10	12·26	13·91	15·83	14·62	9·70	8·40	8·00	7·55	7·74	7·50	8·12	10·14	354·05	...	...	21·13
Ranchee ...	279	4·91	5·13	4·23	5·88	6·25	4·62	3·73	3·55	4·17	5·84	3·52	2·72	4·23	156·34	32·26	...	75·27
Hazarcebaugh ...	626	2·22	4·59	4·01	4 64	6·78	4·40	5·64	4 20	3·12	5·80	5·34	5·19	4·66	115·05	...	...	20·77
Monghyr ...	378	19·23	11·63	7·74	4 01	4·41	5·08	5·17	4·24	3·98	3·80	2·99	2·87	3·51	148·40	15·87	...	55·56
Bhaugulpore ...	341	5·05	5·00	5·16	3·47	2·90	2·32	2·65	4·86	3·73	4·40	3·40	1 85	3·81	126·98	2·93	...	35·19
Purneah ...	420	4 12	3·52	3·52	4·69	2·97	3·23	3·23	3·16	3·48	6·08	7·94	5 42	4·05	145·24	54·76	...	140·48
Darjeeling ...	72	..	....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gyah ...	475	2·10	3·26	2·47	2·36	1·26	1·17	2·21	2·12	2·51	1·68	1·74	1·66	2·11	38·53	...	...	40 00
Patna ...	433	3·97	3·14	3·22	3·94	2·59	1·56	1·58	3·42	2·37	2·11	1 89	2·08	2·77	112·24	32·33	...	57·74
Deegah ...	235	1·17	·88	2·53	1·95	1·90	1·19	1·21	1·68	1·93	1·51	·92	·18	1 43	77·33	35·80	...	95·47
Arrah ...	477	·21	·25	·55	2·85	1·17	1·18	2·06	2·53	2·14	2·31	1·93	1·55	1·62	37·41	...	...	32 33
Chumparun ...	484	1·93	2·38	1·74	2·55	3·33	4·17	4·24	4·80	5·95	4·59	4·20	5·35	3 83	119 57	...	...	42·55
Mozufferpore ...	705	5·24	5·75	4·92	5 63	4·62	4·02	4·31	6·54	6 31	5·92	4·68	3·72	5·24	159 33	2·10	...	85·95
Chuprah ...	419	2·17	2·66	2·99	4·07	2·98	3·68	4·33	5·30	6 62	7·21	4·34	3·23	4 34	112·40	49·59	...	144·63
Ghazeepore ...	433	...	·59	·89	·77	·75	·73	·44	·56	·92	·79	·64	·66	·71	20 85	...	...	26·95
Benares ...	1193	2·22	2·49	2·06	2·06	1·13	1·23	1·50	2·60	3·90	4·07	2·65	2·18	2·35	77·62	·84	...	39·40
Mirzapore ...	431	1·96	1·51	2·72	1·89	1·03	1·87	1·18	1·93	2·97	3·14	2·62	1·62	2·09	45·94	...	...	32 18
Azimghur ...	474	1·43	2·69	2·37	3·70	2·63	2 69	1 88	1·94	1·81	1·34	2·05	2·64	2·32	67 09	2·11	...	33·76
Juanpore ...	258	3·17	1·91	2·09	2·07	3·38	2·19	2·77	3·06	2 95	1·89	2·07	2·20	2·33	85·66	...	...	23·26
Goruckpore ...	664	3·74	2·83	2·09	2·39	3·17	2·16	4 30	3·07	4·06	4·98	4·16	2·43	3·31	104·67	3·01	...	60·24
Gondah ...	365	4·27	2·13	3·36	4·59	4·57	4·14	3·41	3·38	4·33	3·53	3·43	3·46	3·84	75·89	...	...	24·66
Baraitch ...	136	2·75	3·25	2·11	2·90	2·27	2·92	2·03	1·75	2·01	2·42	2·29	1·56	2 21	105·15	...	...	22·06
Fyzabad ...	867	1·84	2·06	2·31	3·53	3·76	3·45	3·12	3 20	3·72	3·34	2·52	2·43	2·88	106·00	1·15	...	53·06
Sultanpore ...	450	2·39	2·74	3·56	6·36	7·37	5·79	2·90	2·37	2·42	2·99	3 22	4·83	3 56	90·89	2·22	...	113·33
Rae Bareilly ...	130	3·39	4·58	2·80	4·44	4·38	3·20	4·63	5·66	4·67	4·81	3·14	3·15	3·85	121·54	7·69	...	30 77
Pertabghur ...	146	4·55	5·67	4·93	7·33	11·32	3·21	5·88	9 26	5 71	5·52	2·29	3·39	5·48	210·27	...	...	34·25
Hurdui ...	123	·88	...	...	1·68	2·56	1·67	·76	1·48	82	...	78	...	81	21·14	...	...	8 13
Luckeempore ...	112	2·35	1·90	4·76	2·73	3·66	4·44	5·38	2 80	3 47	3·40	3 70	4 35	3 57	215·18	...	...	17 86
Lucknow ...	2619	2·24	3·13	3·59	3·87	3·78	2·55	3·48	6 73	5 42	3 16	2 81	2 71	3 63	86 75	...	...	177 93
Seetapore ...	875	3·48	2·93	2·66	3·21	3·27	3·39	3·10	3 83	6 68	3 18	3 46	3 33	3 54	124 00	12·57	...	72 00
Etah ...	201	1·97	3·50	3·65	3·88	3·45	3·28	2·42	1 35	1·46	1 86	1 46	1 96	2 49	96 02	...	...	9 95
Humeerpore ...	129	2·59	3·85	2·65	2·59	3·80	2·38	2 63	2 86	2 96	2 60	2 53	1 57	2 33	112 40	...	...	15 50
Oraie ...	105	5·38	4·96	3·39	4·00	2·86	4·21	3·00	6 93	12 00	6·00	8 00	4 44	5 71	197 14	...	...	57 14
Futtehghur ...	432	1·74	1·83	1·03	1·43	1·33	2·33	2 80	3 01	3 35	3 07	3·25	3 37	2·55	91 20	...	...	..
Cawnpore ...	265	3·14	4·11	2·88	3·88	4·55	2·11	2·30	2 21	3 09	2 34	2 43	2 46	3 02	99 25	...	...	15 09
Banda ...	289	3·52	4·67	4 15	3·02	3·86	3·73	4·24	3 82	4 98	6 65	4 78	3 79	4 50	143 60	...	...	55 36
Nagode ...	72	7·41	7·78	8·33	10·96	12·50	10 81	17·14	3·04	14 08	14·74	15 94	8 57	11 11	169 44	..	..	..
Allahabad ...	2346	2·57	2·81	2·48	2·89	2·42	2 65	2·74	2 47	2 82	3 02	3 37	3 70	2 81	91 35	·85	...	24 29
Raipore ...	385	2·99	4·09	3·72	5 11	6 19	5 78	5·19	4 87	5 04	4 49	4 51	3 68	4 68	156 10	103·89	...	314 29
Belaspore ...	75	6·35	8·96	3·64	1 35	2 06	3 37	2 99	1 27	1·25	1·27	2·50	1 54	2 67	101 33	...	...	...
Bandhara ...	294	3·34	2·99	3·34	3 33	3 07	4 01	7 83	16 36	7 52	8 37	7 43	6 88	4 76	145 92	88·44	...	156 46
Chanda ...	212	4·98	4·95	3·77	4 49	4 35	3 60	3 21	3 65	4 02	4 46	6 63	6 04	4 25	102·83	14·15	...	23 58
Nagpore ...	790	5·39	6·49	9·69	10·79	9 50	7·60	8·59	9·93	14 17	19 69	10 20	6 40	9 75	264 56	68·35	...	218 99
Chindwarra ...	149	1·29	1·87	2·27	1·41	1 43	3 57	1 94	4·41	5 66	7 09	9 71	4 30	4 03	91·28	...	...	60 40
Kowtah ...	40	6·38	2·22	...	5·00	5 26	2 86	5 56	5·13	10 26	12 50	2 50	3 85	5 00	190 00	...	...	...
Sirouncha ...	48	7·14	3·33	5·36	5 45	8 16	11 63	14 00	15 56	13 64	16 28	12 20	10 00	10 42	289 58	...	...	...
Mundla ...	60	4·76	13·33	10·34	5 66	3 36	4 94	6·58	10 00	13 10	7 59	10 29	9 59	8 33	343 33	...	...	...
Jubbulpore (Civil) ...	407	6·30	7·20	10 65	10 77	3·18	2 38	2·18	1 88	3 44	4 41	4 66	4·19	5·16	154 30	4·91	...	127 76

STATIONS.	Average Strength for the Year.	Daily sick per cent. of Average Strength in each month.												Daily sick per cent. of Average Strength for the year.	Admitted into Hospital per cent. of Average Strength.	Died per 1000 of Average Strength.		
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.			A. Cholera.	B. Sudden Deaths out of Hospital.	C. All Causes.
Dumoh ...	125	4·65	4·84	6·03	8 73	9 63	7 58	9 30	9 77	17 97	20 16	15 52	11 00	10 40	246·40	...	...	8 00
Saugor ...	278	5·09	5·19	5·04	4 23	7 55	9 35	9 64	13 79	11 64	17 83	14·24	9·19	9 35	215·11	...	...	39 57
Nursingpore ...	185	3·53	3·01	2·91	5 14	4 60	3 39	3 57	4 04	2 86	4 29	4 31	2 50	3 78	170 27	16 21	...	21 62
Lullutpore ...	158	2·64	3·70	5·42	6 71	2 84	77	2·27	2 90	2 84	2 76	2 40	2·19	3 16	70 25	...	...	25 32
Jhansi ...	264	6·61	7·58	6·13	5·57	4 64	3·57	3 96	2 96	4 20	6 48	5 45	3 77	4 92	165 87	...	...	11 36
Seonee ...	191	2·14	2·72	3·83	2 04	1·52	1 52	1·55	2 62	4 57	3 54	3 16	2 22	2 62	90 05	26·18	...	57 59
Baitool ...	162	1·81	2·37	1·33	3 36	2 96	2 87	2·91	1 73	2 34	2 45	2 61	1 44	2 47	90 74	...	...	18 52
Sehore ...	108	3·97	3·45	2·54	5 66	4 39	3 45	3 74	7 48	8 16	7 37	6 38	5 00	4 63	199 07	...	...	64 81
Hoshungabad ...	239	7 81	6·81	7·09	7 20	6 50	6 12	7 11	7 52	7 66	12 80	10 33	12 75	8·37	106 28	33·47	...	75 31
Nimar ...	124	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...	...
Ajmere ...	318	6·14	5·47	3·85	4·36	4 57	2 74	3 07	3 44	4 24	4 98	4 11	4 00	4 09	150 63	...	...	34 59
Beaur ...	91	7·23	6·67	8·11	7 63	8 16	11 27	8 33	8 91	9 91	6 90	9 46	5 06	7 69	235 16	...	...	10 00
Muttra ...	281	3·82	2·69	2·43	2 23	1·66	2 01	2 15	2 08	2 52	4 50	4 12	4 40	2 85	116 37	...	...	17 79
Agra ...	1830	1·07	1·25	1·56	1·18	·71	43	1 03	1 75	1 12	1 27	·88	·28	1 04	33·66	10·93	...	35 52
Secundra ...	103	1·33	1·53	2·54	·96	1 96	1 15	1 16	1 25	·80	3 12	1 67	...	1 94	51 46	...	...	19 42
Etawah ...	192	1·05	3·17	·74	1·29	60	·53	·45	2 46	·55	1 69	1 43	·32	1 04	85·42	5 21	...	20 83
Mynpooree ...	304	1·47	2·43	1·46	2 94	1 47	1 50	2 03	1 39	1·72	3 42	2 89	1 22	1 97	55 59	...	...	23 03
Allyghur ...	282	1·90	2·60	2·64	4 22	4 56	3 72	3 42	3 05	2 55	3 38	2 25	3 32	3 19	109 93	...	...	31 91
Bolundshuhur ...	157	2·33	1·40	1·33	1 47	3 12	4 17	3·21	1 56	2 26	5 71	3·90	2 78	2 55	92 36	...	...	6 37
Shahjchanpore ...	286	2·23	2·30	2·84	2·67	4 67	7 01	5 02	2 97	4 12	4 86	3 72	3 25	3 85	78 67	...	...	27 97
Bareilly ..	1697	·60	·61	1·02	1·69	2 71	2 58	1 59	1 94	2 43	2 28	1 93	1 57	1·77	71 18	·59	...	55 98
Budaon ...	202	5·73	4·84	3·28	5 13	5 74	5 24	5 61	4 57	5 48	2 83	3 65	2 31	4 46	112 38	...	...	14 85
Scharunpore ...	239	1·28	1·21	1·24	1·64	3 10	1 78	2 52	1 72	2 02	·77	83	·87	1·67	34 31	...	...	29 29
Bijnore ...	251	·80	1·29	·86	2·33	1 94	2·75	1 90	1 82	2·56	1·61	2 04	2 28	1·99	97·61	...	...	7 97
Deyrah ..	58	5·88	1·96	3·70	3 33	7 41	6 67	3 23	3 51	4 48	4 35	5 17	4 17	5 17	184 48	...	...	68 97
Almorah ...	126	7·63	8·33	9·91	8 70	7 56	9 24	10 66	9 09	8 05	9 48	7 30	7 90	8 73	340·48	...	...	39 68
Mozufferuggur ...	113	2·08	2·17	...	·96	1 92	1 89	1 67	3 94	2 31	·88	2 38	76	1 77	81 42	...	...	26 55
Moradabad ...	330	1·79	1·37	1·54	1 12	2 06	1 81	2 05	2 40	2 76	2 53	3 24	2 35	2 12	65 45	...	...	33 33
Meerut ...	1242	·72	·73	1·14	·93	1 02	1 29	90	·92	1 25	85	1 22	·91	97	34 86	...	...	19 32
Delhi ...	278	6·11	4·08	4·36	4·78	4 15	4 22	3 43	3 97	5 59	4 91	5 32	3 61	4 68	165 11	...	...	17 99
Rhotuk ...	209	1·52	2·14	2·19	2 29	2 19	2 29	2 49	1 61	·83	1 69	·94	1 56	1 91	75 60	...	...	14 35
Hissar ...	174	1·02	1·19	1·19	1 23	3 93	2 19	1 49	1 00	1 50	2 92	2 17	·63	1 72	70 11	5·	...	22 99
Sirsa ...	257	4·85	12·50	15·83	4 96	3 42	3 45	3 49	2 14	2 32	1·82	3·00	·93	4 67	134 24	...	...	89 49
Kurnaul ...	69	2·50	6·06	3·85	8·89	5 88	12 50	13·33	17 65	24 14	5 17	9 26	6 90	7 25	144 93	...	...	28 99
Umballa ...	629	5·42	4·18	3·44	2 24	2 52	2 43	1 94	2 55	4 16	4 90	3 25	2 44	3 34	95 71	...	...	40 36
„ Gang at Ghugger																		
Loodianah ...	168	5 16	4·58	5·56	6 94	6 29	6 17	6 25	5 81	5 49	6 70	4 98	2 59	5 36	293·45	...	...	11 90
Jullundur ...	292	2·89	2·81	3·24	3 23	3 32	2 86	2 64	3 21	4 55	3 64	1 87	1 11	3 08	118 15	...	...	17 12
Ferozepore ...	435	...	·22	·24	...	·26	81	1 26	95	1·46	81	·39	·22	·46	11 03	...	...	2 30
Umritsur ...	535	15·16	4·52	2·9	4·27	3 16	3 26	2 52	1 91	3 65	2 98	2 15	1 70	3 74	137 94	...	...	67 29
Lahore ...	1964	2·30	4·58	4·55	4 23	2 80	2 48	1 94	1·71	1 77	3 39	6 06	3 50	3 26	86 20	...	...	45 82
Lahore Female Jail...	186	8·07	7·30	6·04	5 41	5 59	3 41	3 35	3 45	3 51	4 79	13 56	8 60	6 45	230 65	...	...	48 39
Sealcote ...	308	·32	·93	1·32	2 75	2 32	2 06	2 97	2 31	2 20	2 53	2 68	2 77	1 95	51 30	3·25	...	19 48
Dhurmsalla ...	154	2·55	3 71	1·99	3 38	2 42	3 57	4 24	7 64	1 24	6 36	6 99	6 56	3·90	170 13	...	...	97 40
Goordaspore ...	278	1·67	·70	·74	1 20	1 62	·77	·72	·69	99	1·32	1 05	1 12	1 08	34 17	...	...	10 79
Goojranwalla ...	352	·91	1·19	1·25	·89	91	95	·54	·53	·81	1 08	51	51	85	42 05	...	...	8 52
Goojerat ...	259	79	·39	1 21	13 06	10 18	3 72	89	59	1 10	1 56	·56	1·11	3 09	104 25	...	...	77 22
Shahpore ...	254	·41	1·19	·78	·44	·44	45	·41	·40	36	·34	·71	1 45	·79	11 93	...	...	...
Jhelum, ...	239	·40	·39	·77	1·08	·78	1 20	·80	·78	1·17	·71	1 55	·81	·77	55 98	...	...	3 86
Googaira and Montgomery ...	307	1·19	2·21	3·59	5 52	6 40	·96	3 88	1·20	·32	·30	·62	67	2 28	56 03	...	...	32 57
Mooltan ...	925	55	·94	·61	·63	·44	·44	65	32	·76	·78	·67	·45	65	24 32	...	...	7 57
Jhung ...	378	·87	5·18	4 17	4 82	3 70	1 61	1 29	·77	1·05	1 25	·97	·72	2 12	60 58	...	...	15 87
Dera Ghazee Khan ...	116	8·57	4·92	7·79	10 64	10 68	9 17	5 98	8 28	3·65	5 56	4 73	3 35	6·90	237 07	...	...	8 62
Dora Ismail Khan ...	282	1·99	1·66	1·42	1 96	2 30	2 43	2 60	2 25	3 63	2·92	1 27	1 53	2 13	96 45	...	...	17 73
Kohat ...	114	2 86	·89	·99	1 00	3 30	3 57	3 17	3·65	3 82	5·45	5 26	3 73	3·51	134 21	...	...	...
Bunnoo ...	108	8·11	1·00	1·69	4·08	4 50	3 81	3 42	5·00	2 70	6 36	4 50	2 53	3 70	183 33	...	...	18 52
Rawul Pindee ...	852	7·30	5·90	4·31	5·62	5 05	4 39	3 49	3·40	4·10	3 49	3 58	3·46	4·46	137 68	...	...	12 91
Peshawur ...	358	2 69	2·90	5·51	16·01	36 08	13 03	3 42	3 13	3 83	3·36	2 39	2 14	7 26	258·94	...	...	167 60

The Sudden Deaths out of Hospital amounted in all to 27, and give a ratio of ·50 per 1000, which should be added to the ratio shown in the first Table of the Series; it has not been thought necessary to specify in this Table the ratio of these deaths for each Jail.

JAILS OF THE BENGAL PRESIDENCY, 1865.

IX.

TABLE showing the Ratio in which the PRINCIPAL DISEASES have contributed to make up the ADMISSION-RATE of the year in the Jail Hospitals of the BENGAL PRESIDENCY.

STATIONS.	Average Strength for the year.	Admitted into Hospital per cent. of Average Strength.												Admitted per cent. of the Average Strength from all Causes.
		Cholera.	Fever, Intermittent.	Fever, Remittent and Continued.	Dysentery and Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Phthisis Pulmonalis.	Dropsy.	Atrophy and Anæmia.	Scurvy.	All other Causes.	
Alipore ...	1,811	3·64	131·08	·39	61·46	·11	1·05	1·33	.44	·44	1·38	4 14	28·44	233·90
Baraset ...	102	4·90	59·80	21 57	47·06	...	5·88	6·86	...	...	·98	...	57 85	204 90
Jessore ...	534	...	32 78	18 16	10·48	...	3·56	23 78	1·31	...	2 62	1·12	49 64	143·45
Kishnaghur ...	333	·60	23 73	90	20·72	·30	2 40	3·30	...	·30	1·20	...	15 62	69·07
Moorshedabad ...	204	...	78 43	2·94	26·96	·49	...	1·47	·98	...	...	...	28·93	140 20
Howrah ...	152	2·63	21 71	...	1645	...	4 60	...	·66	...	...	...	10·53	56·58
Hooghly ...	578	2·60	79 58	·69	60 73	...	2·07	7·79	1·56	1·21	2 42	...	99 83	258 48
Burdwan ...	487	1·03	53 80	...	28·75	·20	·41	1·64	...	1·23	2 67	...	45 59	135·32
Bancoorah ...	480	6 25	6 87	·21	8·12	·21	...	·21	·21	...	...	...	40 00	62 08
Puruleah ...	174	...	27 02	...	4·60	...	·57	·57	...	...	·57	...	26 44	59·77
Raneegunge ...	28	..	...	...	...	...	...	...	...	...	...	...	...	...
Sooree ...	245	...	22 45	1·22	4·90	...	2·86	6·53	...	...	4 90	...	32 65	75·51
Rajmehal ...	136	8 82	75 74	12 50	27·94	...	5·88	1 47	1·47	1 47	...	...	53 68	188·97
Deoghur ...	79	2·53	36 71	2·53	27·84	1·27	2·53	1·27	...	...	1 27	...	56 96	132 91
Malda ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dinagepore ...	443	·45	103·84	...	36·12	...	1·13	2 93	·45	6·77	...	·45	12·87	165 01
Rampore Bauleah ...	425	·47	71 53	·24	20 00	·24	·47	5·64	·47	·24	·94	...	31 29	131·53
Rungpore ...	355	...	61 69	2·54	23·66	·28	6 20	12·39	1·41	·56	3 38	...	49 30	161·41
Bograh ...	124	...	63 71	·81	80·64	...	·81	8·06	3·23	1 61	·81	...	47·58	207 26
Mymensing ...	418	·96	61·24	2·39	31·10	...	1·43	11·00	...	1·20	·72	·96	32 06	143·06
Pubna ...	136	11·03	98 53	·73	74·27	...	2·21	·73	...	2.21	·73	...	97 06	287 50
Furreedpore ...	436	...	53 90	7·11	20 19	...	8·03	4 82	·23	...	1 15	...	40 58	136 01
Backergunge ...	407	3·19	49 88	...	32·19	·25	2·70	3·68	·25	·49	3 44	...	48 65	144 72
Noacolly ...	173	...	106·94	·58	52 60	...	·58	4·05	...	5·20	2 31	...	116·18	288·44
Chittagong ...	304	·66	52·30	...	5 26	·33	...	2 96	·99	1 31	..	...	22 37	86 18
Tipperah ...	374	...	72 19	·53	16 84	·27	...	4·55	1·07	...	1 07	...	22·73	119·25
Dacca ...	474	·42	42·83	20·25	20·46	...	3·38	4 01	...	·63	·42	...	29 33	121 73
Sylhet ...	403	·75	88 83	1 99	31 76	...	1 24	2·98	·25	·99	...	3 72	54 34	186·85
Cachar ...	226	15·49	73·89	2·21	99 56	...	12·39	6·20	·89	2 21	...	·44	68·58	281·86
Gowalparah ...	140	2 14	15 00	100·72	45 00	·71	2 86	18·57	...	3 57	1·43	·71	99 29	290 00
Gowhatty ...	154	12·99	135·71	2·60	90·26	1 30	1·30	23 37	...	1·95	...	...	59 74	329 22
Seebsagur ...	81	...	55·56	2·47	23·46	...	1·23	1·23	...	...	1 23	...	49 39	134 57
Nowgong ...	43	...	...	...	...	...	...	...	...	...	...	...	...	...
Tezpore ...	214	7·01	54·20	32·7	25·70	·47	·47	6·54	...	·47	4·21	...	35 04	137·38
Debrooghur ...	122	1 64	51·64	1 64	38·52	...	4 10	2·46	...	...	...	...	84 43	184 43
Midnapore ...	616	·32	27 27	10·39	18·67	1·14	...	2·76	·81	·17	1·46	...	92·53	155·52
Balasore ...	227	·44	30 84	7 49	43·61	·88	...	17·18	1·76	...	1 76	...	67·41	171·37
Cuttack ...	398	...	61 06	·50	19·35	·50	·75	1·76	·50	...	3 02	...	44 72	132·16
Pooree ...	77	6 50	37·66	...	35 06	...	...	2·60	...	...	...	...	62·34	144·16
Sumbulpore ...	148	...	93 92	...	56·76	...	...	6·08	·67	...	...	...	196·62	354·05
Chyebassa ...	142	...	34 50	10·56	16·20	...	...	4 22	...	·70	·70	1·41	88 03	156·32
Ranchee ...	279	5·37	31 90	1·79	18 28	·36	2 51	2·86	·36	·72	1·08	·36	49·46	115 05
Hazareebaugh ...	626	·16	52 87	·16	25 56	...	·64	4·47	1·28	1·60	·16	8 31	53·19	148·40
Monghyr ...	378	3 44	53 44	·53	57·68	·26	·53	5·29	...	·26	...	...	56 36	177·78
Bhaugulpore ...	341	1 76	49·56	...	24 92	...	·59	·59	...	...	1·76	1·76	46·04	126·98
Purneah ...	420	10·48	63·33	1·19	28 57	...	·71	2 62	...	1·43	·48	...	36·43	145·24
Darjeeling ...	72	...	...	...	...	...	...	...	...	...	...	...	...	...
Gyah ...	475	...	7·58	2·95	13·26	·42	·21	1·27	·42	·21	1 05	·42	10·74	38·53
Patna ...	433	7 62	53·12	·46	27 48	·46	...	·46	·23	...	1·16	·23	21·02	112·24
Deegah ...	419	8·59	31·98	·95	29·59	...	...	·73	...	·24	...	...	5 25	77·33
Arrah ...	433	·46	10 16	·69	15 01	·23	·46	1·16	...	...	·69	...	8·55	37·41
Chumparun ...	235	...	37·87	...	39·15	...	·85	4·68	...	·85	·43	...	35·74	119·57
Mozufferpore ...	477	·21	32·70	1·68	87·00	...	...	1·89	...	...	·21	·21	35 43	159·33
Chuprah ...	484	15·08	23 97	·62	48·55	...	·41	·21	·21	...	2 27	...	21·08	112·40
Ghazeepore ...	705	...	6 67	...	5·25	...	·28	·71	...	...	·28	...	7 66	20·85
Benares ...	1,193	·16	26 57	·42	15·43	·08	·29	1·01	·17	·08	·42	...	32 36	77·62
Mirzapore ...	431	...	17 64	·69	8·58	...	...	·69	...	...	·93	...	17·41	45 94
Azimghur ...	474	21	19 41	...	13·08	...	·42	1·27	...	...	...	...	32·70	67·09
Juanpore ...	258	...	34·11	·78	15·12	...	...	1·94	...	·78	·37	·78	31 78	85·66
Goruckpore ...	664	·30	33 13	·45	33·13	...	·45	1·21	·15	...	...	...	35·85	104 67
Gondah ...	365	...	24 38	1·10	15 36	...	·82	1 92	...	...	...	1 10	31 23	75·89
Baraitch ...	136	...	41 18	...	33·09	...	·73	1·47	...	·73	...	...	27 95	105 15
Fyzabad ...	867	·12	46 83	8·19	34·25	...	·12	1 61	...	·12	·12	·57	14·07	106·00
Sultanpore ...	450	·22	41 78	8 00	20·00	...	...	1·33	...	...	·89	...	18 67	90·89
Rae Bareilly ...	130	2·31	31·54	3·85	21·54	...	...	5·38	...	...	·77	...	56 15	121·54
Pertabghur ...	146	...	54 79	18·49	41·78	...	...	10 27	·69	...	...	...	84 25	210 27
Hurdui ..	123	...	...	2·44	6 51	...	...	·81	·81	...	...	...	10 57	21·14
Luckimpore ...	112	...	89 28	7 14	39·29	...	1·79	·89	...	...	·89	...	75·90	215·18
Lucknow ...	2,619	...	10 19	9·31	32·00	·04	·08	·73	·04	·04	·80	·04	33·48	86·75
Seetapore ...	875	3·54	36·69	3 89	23 31	·11	...	3 20	·11	...	2 29	...	50 86	124 00

STATIONS.	Average Strength for the year.	Admitted into Hospital per cent. of Average Strength.												Admitted per cent. of the Average Strength from all Causes.
		Cholera.	Fever, Intermittent.	Fever Remittent and Continued.	Dysentery and Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Phthisis Pulmonalis.	Dropsy.	Atrophy and Anœmia.	Scurvy.	All other Causes.	
Etah ...	201	...	15·42	...	10 95	...	...	7·96	...	...	...	...	61·69	96·02
Humeerpore ...	129	...	56·59	6·20	14·73	...	2·32	1·55	..	...	·78	...	30·23	112·40
Oraie ...	105	...	93·33	15·24	16·19	...	...	5·71	..	1·90	·96	...	63 81	197·14
Futtehghur ...	432	...	25·00	16·67	3·24	...	·46	2·08	...	·23	...	...	43·52	91·20
Cawnpore ...	265	...	29·81	7 93	24·91	...	...	·75	...	...	1·51	...	34·34	99·25
Banda ...	289	·35	50·86	3·12	19·72	...	1·04	1·73	...	...	1·04	...	65·74	143·60
Nagode ...	72	1·39	50·00	23·60	12·50	...	...	2·78	...	2·78	...	...	76·36	169·44
Allahabad ...	2,346	·34	36·57	·98	15·39	·09	·21	2·26	·04	...	·30	·04	35·13	91·35
Raepore ...	385	18·70	37·16	2·59	41·30	...	..	2·59	...	·26	4·15	1·30	48·05	156·10
Belaspore ...	75	1·33	12·00	1·33	8·00	...	...	1·33	...	...	9·34	...	68·00	101·33
Bandhara ...	294	16·67	45·24	2·04	29·94	...	...	1·70	·68	...	3·74	3·40	42·51	145·92
Chanda ...	212	1·89	42·45	...	12·26	...	...	...	...	...	...	...	46·23	102·83
Nagpore ...	790	12·91	97·97	6·33	37·47	...	·13	7·09	·13	·13	·63	3·92	97·85	264·56
Chindwarra ...	149	...	20·14	·67	17·45	...	...	...	...	...	·67	·67	51·68	91·28
Kowtah ...	40	...	...	...	...	...	...	...	...	...	...	...	...	...
Sironcha ...	48	...	...	...	...	...	...	...	...	...	...	...	...	...
Mundla ...	60	...	...	...	...	...	...	...	...	...	...	...	...	...
Jubbulpore (Civil) ...	407	·74	39·56	55·53	13·27	...	...	3·69	...	·24	1·96	·24	39·07	154·30
Jubbulpore (Thuggee) ...	518	...	...	...	...	...	...	...	...	...	...	...	...	...
Dumoh ...	125	...	116·80	...	8·80	1·60	·80	6·40	...	...	·80	...	111·20	246·40
Saugor ...	278	...	74·82	·72	18·70	·36	1·80	4·32	·36	...	2·16	·36	111·51	215·11
Nursingpore ...	185	3·24	25·95	14·05	32·97	·54	4·32	3·79	...	...	...	...	85·41	170·27
Lullutpore ...	158	...	24·68	...	5·70	...	...	4·43	...	...	1·90	...	33·54	70·25
Jhansi ...	264	...	63·25	...	10·98	...	·37	2·27	...	...	·37	...	88·63	165·87
Seonee ...	191	4·19	27·75	25·65	5·76	...	...	2·62	...	...	...	...	24·08	90·05
Baitool ...	162	...	27·78	...	12·34	...	...	·62	...	...	...	...	50·00	90·74
Sehore ...	108	1·85	81·48	1·85	36·11	...	...	4·63	...	...	5·56	...	67·59	199·07
Hoshungabad ...	239	5·44	104·18	...	19·66	...	42	3·77	...	·84	...	...	71·97	206·28
Nimar ...	124	...	...	...	...	...	..	...	...	...	...	...	...	...
Ajmere ...	318	·32	61·32	20·75	27·04	...	·32	3·77	...	·63	·94	·32	35·22	150·63
Beaur ...	91	...	27·47	2·20	16·48	...	...	6·59	1·10	...	7·69	...	173·63	235·16
Muttra ...	281	...	32·74	6·76	17·08	...	...	1·07	...	...	1·07	...	57·65	116·37
Agra ...	1,830	1·69	8·20	1·75	8 47	.16	·22	3·06	·33	·05	·27	...	9·46	33·66
Secundra ...	103	·97	14·57	1·94	10·68	...	...	·97	·97	...	...	...	21·36	51·46
Etawah ...	192	4·69	35·94	...	25·52	...	..	...	...	...	...	...	19·27	85·42
Mynpoorie ...	304	...	25·66	·99	7·89	...	...	1·97	...	...	1·65	...	17·43	55·59
Allyghur ...	282	...	42·91	3·19	20·21	...	·36	2·84	...	...	·36	...	40·07	109·93
Bolundshuhur ...	157	...	31·85	3·82	14·01	...	...	4·46	...	..	...	...	38·22	92·36
Shahjehanpore ...	286	...	11·89	6·64	3·50	...	...	8·39	...	...	...	...	48·25	78·67
Bareilly ...	1,697	·06	...	50·55	13·08	...	...	1·06	...	...	·12	...	6·31	71·18
Budaon ...	202	...	25·74	15·35	4·46	...	...	1·98	·49	...	·99	...	63·37	112·38
Seharunpore ...	239	...	10·04	·84	2·93	...	...	2·93	·84	...	...	...	16·73	34·31
Bijnore ...	251	...	41·83	...	6·38	...	...	5·18	...	...	...	...	44·22	97·61
Deyrah ...	58	...	...	...	...	...	...	...	...	...	...	...	...	...
Almorah ...	126	...	95·24	...	40·48	1·59	1·59	27·78	...	...	2·38	...	171·42	340·48
Mozuffernuggur ...	113	...	34·51	...	6·20	...	..	2·66	...	...	..	...	38·05	81·42
Moradabad ...	330	...	11·51	4·54	10·61	...	·30	2·73	...	...	·61	...	35·15	65·45
Meerut ...	1,242	...	12·72	·24	4·75	...	·24	2·18	·24	...	·48	...	14·01	34·86
Delhi ...	278	...	101·44	3·96	18·70	...	·36	1·80	...	...	...	...	38·85	165·11
Rhotuk ...	209	...	33·49	1·91	7·66	·48	...	2·39	...	...	...	·48	29·19	75·60
Hissar ...	174	·57	42·55	·57	1·72	...	...	2·29	...	...	...	...	22·41	70·11
Sirsa ...	257	...	97·66	6·23	7·39	...	·39	1·17	...	·39	...	...	24·51	137·74
Kurnaul ...	69	...	28·98	...	2·90	...	...	2·90	...	...	...	7·25	102·90	144·93
Umballa ...	629	·16	39·75	4·13	13·83	·64	·16	·79	·16	...	2·38	·48	33·23	95·71
Loodianah ...	168	...	88·09	5·36	25·60	...	...	...	...	...	12·50	...	161·91	293·45
Jullundur ...	292	...	56·51	·68	8·56	...	...	2·74	...	·35	·68	...	48·63	118·15
Ferozepore ...	435	...	·23	...	·23	...	...	·46	...	...	·23	...	9·88	11·03
Umritsur ...	535	...	79·06	22·99	7·48	...	·75	2·62	...	...	·37	·19	24·48	137·94
Lahore ...	1,964	...	58·05	11·76	2·44	...	·31	·81	...	·05	·36	...	12·42	86·20
Lahore Female Jail ...	186	...	129·57	4·30	15·05	1·61	11·29	2·69	·54	...	3·23	2·15	60·22	230·65
Sealkote ...	308	·32	18·83	...	5·52	...	...	1·63	·32	..	·65	...	24·03	51·30
Dhurmsalla ...	154	...	67·53	34·42	25·32	...	...	3·90	...	·65	..	...	38·31	170·13
Goordaspore ...	278	...	11·51	1·08	5·75	..	·36	1·08	·36	...	...	...	14·03	34·17
Goojranwalla ...	352	...	11·65	5·40	4·83	·57	...	2·27	·28	...	...	...	17·05	42·05
Goojerat ...	259	...	74·51	22·01	1·93	·39	..	1·16	...	...	·39	...	3·86	104·25
Shahpore ...	254	...	5·12	·79	·79	...	...	1·18	...	...	·39	...	8·27	16·54
Jhelum ...	259	·77	32·05	...	6·18	·38	..	.	...	...	...	...	16·60	55·98
Googaira and Montgomery ...	307	...	18·89	17·59	2·93	...	·65	3·58	·33	...	·33	...	11·73	56·03
Mooltan ...	925	...	10·81	·11	3·24	...	·11	·97	...	·11	1·08	·43	7·46	24·32
Jhung ...	378	...	16·67	·26	5·03	...	·80	4·23	·26	...	1·85	·53	30·95	60·58
Dera Ghazee Khan ...	116	...	37·93	5·17	23·28	...	2·59	11·21	...	...	·86	...	156·03	237·07
Dera Ismael Khan ...	282	...	20·43	...	9·22	...	·35	7·09	...	...	...	2·84	47·52	96·45
Kohat ...	114	...	65·79	...	13·16	...	1·75	·88	...	...	...	·88	51·75	134·21
Bunnoo ...	108	...	133·33	1·85	16·67	...	...	4·63	...	...	...	...	26·85	183·33
Rawul Pindee ...	852	...	62·33	5·05	11·74	...	·35	3·87	...	·23	·59	·70	52·82	137·68
Peshawur ...	358	...	127·93	25·14	32·68	·56	·28	1·96	...	...	...	17·88	52·51	258·94

JAILS OF THE BENGAL PRESIDENCY, 1865.

X.

TABLE showing the PREVALENCE of CHOLERA in each Month, and the distribution of the DISEASE by STATIONS and PROVINCES.

STATIONS.	Average Strength for the Year.	Number of Admissions into Hospital in each Month.												Total Admissions.	Admitted per cent. of Average Strength.	Number of Deaths.	Died per 1000 of Average Strength.
		Jan.	Feb.	Mar.	Apl.	May.	June.	July.	Aug.	Sep.	Oct.	Nov.	Dec.				
Aliporg ...	1,811	2	6	...	2	1	...	...	...	3	36	13	3	66	...	25	...
Baraset ...	102	...	...	...	...	...	...	...	1	...	4	...	...	5	...	3	...
Jessore ...	534	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kisbnaghur ...	333	...	1	...	1	...	...	...	...	...	...	...	...	2	...	1	...
Moorshedabad ...	204	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Howrah ...	152	...	...	...	2	...	1	...	...	...	...	1	...	4	...	1	...
Hooghly ...	578	2	...	...	6	1	...	1	2	1	2	...	...	15	...	6	...
Burdwan ...	487	...	...	1	1	...	2	...	1	...	...	...	...	5	...	...	...
Baneoorah ...	480	...	...	12	18	...	...	...	...	...	...	...	...	30	...	8	...
Purulea ...	174	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...
Raneegunge ...	28	...	...	2	...	...	...	...	...	...	...	...	...	2	...	...	...
Sooree ...	245	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rajmehal ...	136	...	...	...	...	...	12	...	...	...	...	...	...	12	...	4	...
Deogurh ...	79	...	...	...	...	...	...	...	...	...	2	...	...	2	...	1	...
Malda ...	55	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dinagepore ...	443	...	...	...	1	...	...	...	...	1	...	...	...	2	...	2	...
Rampore Bauleah ...	425	..	...	...	2	...	...	...	...	...	...	...	...	2	...	...	...
Rungpore ...	355	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bograh ...	124	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mymensingh ...	418	...	...	...	...	1	...	...	...	...	3	...	...	4	...	2	...
Pubna ...	136	...	...	...	1	14	...	...	...	...	...	...	...	15	...	3	...
Fureedpore ...	436	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Backergunge ...	407	...	...	4	...	5	...	...	...	...	...	4	...	13	...	1	...
Noacolly ...	173	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chittagong ...	304	...	...	...	...	...	2	...	...	...	...	...	...	2	...	2	...
Tipperah ...	374	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dacca ...	474	...	...	2	...	...	...	...	...	...	...	...	...	2	...	...	...
Sylhet ...	403	...	...	...	...	...	...	...	...	...	...	3	...	3	...	3	...
Caehar ...	226	...	...	2	...	2	4	...	...	...	21	6	...	35	...	24	...
Gowalpara ...	140	...	...	1	...	...	2	...	...	...	...	...	...	3	...	...	...
Gowhatty ...	154	...	...	...	20	...	...	...	...	...	...	...	...	20	...	11	...
Seebsagur ...	81	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nowgong ...	43	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tezpore ...	214	...	...	...	3	9	...	2	1	...	...	...	...	15	...	9	...
Debrooghur ...	122	...	...	1	...	...	...	...	...	...	...	1	...	2	...	...	...
Midnapore ...	616	...	...	...	...	...	...	1	1	...	...	...	...	2	...	...	...
Balasore ...	227	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...
Cuttaek ...	398	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pooree ...	77	...	...	...	...	...	3	2	...	...	...	...	...	5	...	3	...
Sumbulpore ...	148	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chyebassa ...	142	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ranchee ...	279	...	...	...	2	1	...	1	9	1	...	1	...	15	...	9	...
Hazareebaugh ...	626	...	...	...	...	...	1	...	...	...	...	...	...	1	...	...	...
Monghyr ...	378	...	...	...	...	...	...	...	...	4	1	8	...	13	...	6	...
Bhaugulpore ...	341	...	...	...	3	...	...	2	1	...	...	...	...	6	...	1	...
Purneah ...	420	...	...	...	44	...	...	...	...	...	...	...	...	44	...	23	...
Darjeeling ...	72	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	14,598	5	7	25	106	34	27	9	16	10	69	37	3	348	2·38	148	10·15
Gyah ...	475	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Patna ...	433	...	...	1	32	...	...	...	...	...	...	...	...	33	...	14	...
Deegah ...	419	...	...	...	22	...	..	...	...	5	1	8	...	36	...	15	...
Arrah ...	433	...	...	...	1	...	...	...	1	...	...	...	...	2	...	...	...
Chumparun ...	235	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mozufferpore ...	477	...	...	...	...	...	...	...	...	...	...	1	...	1	...	1	...
Chuprah ...	484	...	...	...	...	...	...	34	8	6	25	...	...	73	...	24	...
Ghazeepore ...	705	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Benares ...	1,193	...	...	...	...	...	...	...	...	2	...	...	...	2	...	1	...
Mirzapore ...	431	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Azimghur ...	474	...	1	...	...	...	...	...	...	...	...	...	...	1	...	1	...
Juanpore ...	258	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Goruckpore ..	664	...	...	...	...	...	...	2	...	...	...	...	...	2	...	2	...
Gondah ...	365	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Baraitch ...	136	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fyzabad ..	867	...	...	...	...	1	...	...	...	...	...	...	...	1	...	1	...
Sultanpore ...	450	...	...	...	...	1	...	...	...	...	...	..	...	1	...	1	...
Rae Bareilly ...	130	...	...	...	...	...	...	...	3	...	...	...	...	3	...	1	...
Pertabghur ...	146	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Hurdui ...	123	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Luckimpore ...	112	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lucknow ...	2,619	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Seetapore ...	875	...	...	...	...	...	...	...	1	30	...	...	...	31	...	11	...
Etah ...	201	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Humeerpore ...	129	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Oraie ...	105	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Futtehghur ...	432	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cawnpore ...	265	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Banda ...	289	...	...	...	...	...	...	1	...	..	...	...	...	1	...	...	...
Nagode ...	72	...	...	...	...	...	1	...	...	...	...	...	...	1	...	1	...
Allababad ...	2,346	...	...	...	...	...	...	...	8	...	...	...	...	8	...	2	...
	16,343	...	1	1	55	2	1	37	21	43	26	9	...	196	1·20	75	4.59

STATIONS.	Average Strength for the Year.	Number of Admissions into Hospital in each Month.												Total Admissions.	Admitted per cent. of Average Strength.	Number of Deaths.	Died per 1000 of Average Strength.
		Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.				
Raipore ...	385	...	...	...	5	42	3	16	5	...	1	...	...	72	...	40	...
Belaspore ...	75	...	...	...	...	...	1	...	...	...	...	...	...	1	...	1	...
Bandhara ...	294	...	...	...	...	...	5	43	1	...	...	...	...	49	...	26	...
Chanda ...	212	...	...	2	1	...	...	...	...	1	...	...	...	4	...	3	...
Nagpore ...	790	...	...	7	13	1	2	68	11	...	...	...	...	102	...	54	...
Chindwarra ...	149	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kowtah ...	40	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sironcha ...	48	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mundla ...	60	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Jubbulpore (Civil) ...	407	...	...	...	...	...	2	1	...	...	...	...	...	3	...	2	...
Jubbulpore (Thuggee) ...	518	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dumoh ...	125	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Saugor ...	278	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nursingpore ...	185	...	...	...	...	5	1	...	...	...	...	...	...	6	...	3	...
Lullutpore ...	158	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Jhansi ...	264	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Seonee ...	191	...	...	...	...	...	7	1	...	...	...	...	...	8	...	5	...
Baitool ...	162	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sehore ...	108	...	...	...	...	1	1	...	...	...	...	...	...	2	...	...	...
Hoshungabad ...	239	...	...	...	13	...	...	...	...	...	...	...	...	13	...	8	...
Nimar ...	124	...	...	...	4	2	...	...	...	...	...	...	...	6	...	1	...
Ajmere ...	318	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...
Beaur ...	91	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	5,221	..	...	9	36	51	22	129	17	2	1	...	...	267	5·11	143	27·39
Muttra ...	281	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Agra ...	1,830	...	...	...	1	...	...	12	18	...	...	...	...	31	...	20	...
Secundra ...	103	...	...	...	...	...	...	1	...	...	...	...	...	1	...	...	...
Etawah ...	192	...	...	...	...	...	...	...	9	...	...	...	...	9	...	1	...
Mynpoorie ...	304	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Allyghur ...	282	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bolundshuhur ...	157	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Shahjehanpore ...	286	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bareilly ...	1,697	...	...	...	...	...	...	...	...	...	1	...	...	1	...	1	...
Budaon ...	202	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Seharunpore ...	239	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bijnore ...	251	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Deyrah ...	58	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Almorah ...	126	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mozuffernuggur ...	113	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Moradabad ...	330	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Meerut ...	1,242	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	7,693	...	...	...	1	...	...	13	27	...	1	...	...	42	·55	22	2·86
Umballa ...	278	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rhotuk ...	209	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...
Hissar ...	174	...	...	...	...	1	...	...	...	...	...	...	...	1	...	1	...
Sirsa ...	257	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kurnaul ...	69	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Umballa ...	446	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
,, Gang at Jhuggur	183	...	...	...	...	...	...	...	...	1	...	...	...	1	...	...	...
Loodianah ...	168	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Julluudur ...	292	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ferozepore ...	435	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Umritsur ...	535	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lahore ...	1,964	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lahore Female Jail ...	186	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sealkote ...	308	...	...	...	...	...	...	1	...	...	...	...	...	1	...	1	...
Dhurmsalla ...	154	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Goordaspore ...	278	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Goojranwalla ...	352	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Goojerat ...	259	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Shahpore ...	254	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Jhelum ...	259	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Googaira and Montgomery	307	...	...	...	...	...	2	...	...	...	...	...	...	2	...	...	...
Mooltan ...	925	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Jhung ...	378	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dera Ghazee Khan ...	116	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dera Ismael Khan ...	282	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kohat ...	114	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bunnoo ...	108	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rawul Pindee ...	852	...	...	...	...	...	...	..	...	...	...	...	...	...	...	...	...
Peshawur ...	358	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	10,182	...	...	...	...	1	2	1	...	1	...	...	...	5	·05	2	·19
Bengal Presidency ...	54,337	5	8	35	198	88	52	1 9	81	56	97	46	3	858	1·58	390	7·19

JAILS OF THE BENGAL PRESIDENCY, 1865.

XI.

TABLE showing the MORTALITY in each JAIL, the CAUSES of DEATH, and the ratio of DEATHS to STRENGTH.

STATIONS.	Average Strength for the Year.	Causes of Death in Hospital.														Number of Deaths.	Died per 1000 of Average Strength.		
		Cholera.	Small-pox.	Fevers.	Apoplexy.	Dysentery & Diarrhœa.	Hepatitis.	Spleen Disease.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy & Anæmia.	Wounds & Accidents.	All other causes.		A. Cholera.	B. All other causes.	C. All causes.
Alipore ...	1,811	25	5	7	3	62	2	...	5	3	8	2	...	...	...	5	127	13·80	56·33	70·13
Baraset ...	102	3	...	...	...	3	...	1	...	...	...	...	...	..	...	1	8	29·41	49·02	78·43
Jessore ...	534	...	4	...	1	8	...	...	2	1	...	...	1	2	1	...	20	...	37·45	37·45
Kishnaghur ...	333	1	...	1	...	5	...	1	...	...	...	...	...	...	...	2	10	3·00	27·03	30·03
Moorshedabad ...	204	...	...	5	1	17	1	...	...	...	2	...	...	...	...	1	27	...	13·24	13·24
Howrah ...	152	1	1	1	...	7	...	2	...	...	1	...	...	...	...	...	13	6·58	78·95	85·53
Hooghly ...	578	6	1	1	...	8	...	...	...	...	4	3	...	...	...	1	24	10·38	31·14	41·52
Burdwan ...	487	...	...	...	2	6	1	...	2	...	...	2	...	...	...	4	17	...	34·91	34·91
Bancoorah ...	480	8	...	...	...	4	...	...	1	...	1	...	...	...	...	...	14	16·67	12·50	29·17
Purulea ...	174	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	2	...	11·49	11·49
Raneegunge ...	28	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	35·72	35·72
Sooree ...	245	...	...	1	...	1	...	...	...	...	...	...	...	3	...	2	7	...	28·57	28·57
Rajmehal ...	136	4	...	...	...	1	...	1	...	...	1	...	...	..	...	...	7	29·41	22·06	51·47
Deoghur ...	79	1	...	1	...	...	1	1	...	...	...	...	...	1	...	...	5	12·66	50·63	63·29
Malda ...	55	...	...	2	...	1	...	...	...	...	...	...	...	...	...	...	3	...	54·55	54·55
Dinagepore ...	443	2	1	...	1	22	...	...	3	...	2	9	...	...	...	2	42	4·51	90·30	94·81
Rampore Baulcah ...	425	...	1	1	...	3	...	...	5	...	2	...	...	1	...	...	13	...	30·59	30·59
Rungpore ...	355	...	...	8	...	13	...	1	2	...	5	...	...	3	1	..	33	...	92·96	92·96
Bograh ...	124	...	...	...	...	2	...	...	...	...	2	...	...	..	...	...	4	...	32·26	32·26
Mymeusingh ...	418	2	4	4	...	8	...	...	5	...	1	4	...	...	...	2	30	4·78	66·99	71·77
Pubna ...	136	3	...	3	...	7	...	1	1	...	...	...	...	1	...	...	16	22·06	95·59	117·65
Furreedpore ...	436	...	...	4	...	5	...	1	3	...	1	...	...	1	..	...	15	...	34·40	34·40
Backerguuge ...	407	1	...	2	...	7	...	...	3	...	...	2	...	...	1	2	18	2·46	41·76	44·22
Noacolly ...	173	...	...	1	...	...	...	1	...	...	...	1	...	...	...	...	3	...	17·34	17·34
Chittagong ...	304	2	...	1	...	...	...	...	1	...	1	...	...	...	1	...	6	6·58	13·16	19·74
Tipperah ...	374	...	...	...	2	...	...	...	2	...	...	..	...	1	...	1	6	...	16·04	16·04
Dacca ...	474	...	...	3	...	2	...	1	3	1	1	...	...	...	...	1	12	...	25·32	25·32
Sylhet ...	403	3	...	5	1	14	...	1	1	...	...	1	...	...	...	2	28	7·44	62·04	69·48
Cachar ...	226	24	...	3	...	22	...	...	...	...	1	1	..	...	1	1	53	106·19	128·32	234·51
Gowalparah ...	140	...	...	...	...	4	...	...	3	...	1	2	...	...	...	2	12	...	85·71	85·71
Gowhatty ...	154	11	...	1	...	18	...	..	5	1	...	...	...	...	3	3	42	71·43	201·30	272·73
Seebsagur ...	81	...	...	1	...	8	...	...	1	...	...	...	...	...	...	...	10	...	123 46	123·46
Nowgong ...	43	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Tezpore ...	214	9	...	2	...	6	1	...	1	...	...	1	...	...	1	1	22	42·06	60·74	102·80
Debrooghur ...	122	...	...	1	...	10	...	1	1	...	...	...	...	...	...	...	13	...	106·56	106·56
Midnapore ...	616	...	...	2	1	10	2	...	5	2	5	...	...	3	...	5	35	...	56·82	56·82
Balasore ...	227	...	...	...	...	1	...	...	...	...	1	...	...	...	...	...	2	...	8·81	8·81
Cuttack ...	398	...	...	1	...	4	1	...	1	...	2	...	...	4	...	3	16	...	40·20	40·20
Pooree ...	77	3	...	...	...	2	...	...	...	...	...	...	...	..	...	1	6	38·96	38·96	77·92
Sumbulpore ...	148	...	...	...	...	4	...	...	...	...	...	...	...	...	1	...	5	...	33·78	33 78
Chyebassa ...	142	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	3	...	21·13	21·13
Ranchee ...	279	9	...	4	...	5	...	1	...	...	1	...	...	...	...	1	21	32·26	43·01	75·27
Hazareebaugh ...	626	...	...	1	1	6	...	...	1	...	2	...	2	...	...	...	13	...	20·77	20·77
Monghyr ...	378	6	...	1	...	9	1	...	1	...	...	...	...	...	...	3	21	15·87	39·69	55·56
Bhaugulpore ...	341	1	...	...	...	5	...	...	...	...	...	...	1	3	...	2	12	2·93	32·26	35·19
Purneah ...	420	23	...	7	...	25	...	...	3	...	...	1	...	...	...	...	59	54·76	85·72	140·48
Darjeeling ..	72	...	...	2	...	1	...	...	...	...	...	...	...	...	...	...	3	..	41·67	41·67
	14,598	148	17	77	13	349	10	14	62	8	45	29	4	24	10	49	859	10·15	48·70	58·85
Gyah ...	475	...	...	4	1	7	1	...	2	...	...	1	...	...	..	3	19	..	40·00	40·00
Patna ...	433	14	...	1	...	6	...	...	...	...	1	...	...	2	...	1	25	32·33	25·41	57·74
Deegah ...	419	15	...	3	...	20	...	...	...	...	...	1	...	...	...	1	40	35·80	59·67	95·47
Arrah ...	433	...	2	1	...	8	1	...	...	...	...	...	...	2	...	...	14	...	32·33	32·33
Chumparun ...	235	..	...	...	...	7	...	...	1	1	...	1	...	...	...	...	10	...	42·55	42·55
Mozufferpore ...	477	1	...	2	...	36	...	...	1	...	...	...	...	...	...	1	41	2·10	83·85	85·95
Chuprah ...	484	24	...	1	...	41	...	...	...	...	1	...	...	...	2	1	70	49·59	95·04	144·63
Ghazeepore ...	705	...	...	...	1	12	...	2	...	1	...	...	...	1	...	2	19	...	26·95	26·95
Benares ...	1,193	1	...	8	3	19	1	2	...	...	2	1	...	3	...	7	47	·84	38·56	39·40
Mirzapore ...	431	...	...	1	1	10	...	...	1	...	...	...	...	...	...	1	14	...	32·48	32·48
Azimghur ...	474	1	1	4	...	9	...	...	...	...	...	..	...	...	...	1	16	2·11	31·65	33·76
Juanpore ...	258	...	...	2	...	2	...	...	1	...	...	...	...	...	1	...	6	..	23·26	23·26
Goruckpore ...	664	2	1	6	1	27	...	...	2	...	1	...	...	...	...	...	40	3·01	57·23	60·24
Gondah ...	365	...	...	3	...	3	...	...	2	...	...	...	...	...	...	1	9	...	24·66	24·66
Baraitch ...	136	...	...	1	...	1	...	...	...	...	...	...	...	...	1	..	3	...	22·06	22·06
Fyzabad ...	367	1	...	18	1	24	...	...	1	...	...	...	...	...	...	1	46	1·15	51·91	53·06
Sultanpore ...	450	1	...	19	...	23	...	...	2	...	...	...	...	...	1	5	51	2·22	111·11	113·33
Rae Bareilly ...	130	1	...	2	...	...	...	...	1	...	...	...	...	...	...	...	4	7·69	23·08	30·77
Pertabghur ...	146	...	...	1	...	2	...	...	...	...	...	...	...	...	2	...	5	...	34·25	34·25
Hurdui ...	123	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	..	8·13	8·13
Luckimpore ...	112	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	2	...	17·86	17·86
Lucknow ...	2,619	...	...	83	4	295	...	...	4	...	2	...	...	62	1	15	466	...	177·93	177·93
Seetapore ...	875	11	...	7	...	30	1	...	4	...	1	...	...	7	...	2	63	12·57	59·43	72·00
Etah ...	201	...	...	...	...	1	...	...	...	...	...	...	...	...	1	...	2	...	9·95	9·95
Humeerpore ...	129	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	2	...	15·50	15·50
Oraie ...	105	...	...	...	...	4	...	...	...	...	...	1	...	...	...	1	6	...	57·14	57·14
Futtehghur ...	432	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cawnpore ...	265	...	...	1	...	2	...	...	...	...	...	...	...	1	...	...	4	...	15·09	15·09
Banda ...	289	...	...	2	...	6	...	1	3	1	...	...	...	1	...	2	16	...	55·36	55·36
Nagode ...	72	1	...	2	...	4	...	...	...	...	...	1	...	...	...	..	8	...	...	...
Allahabad ...	2,346	2	...	10	2	27	...	...	2	1	1	...	...	1	3	8	57	·85	23·44	24·29
	16,343	75	4	183	14	629	4	5	27	4	9	6	...	80	13	53	1,106	4·59	63·08	67·67

STATIONS.	Average Strength for the Year.	Causes of Deaths in Hospital.															Number of Deaths.	Died per 1000 of Average Strength.		
		Cholera.	Small-pox.	Fevers.	Apoplexy.	Dysentery & Diarrhœa.	Hepatitis.	Spleen Diseases.	Respiratory Diseases.	Heart Diseases.	Phthisis Pulmonalis.	Dropsy.	Scurvy.	Atrophy & Anæmia.	Wounds & Accidents.	All other causes.		A. Cholera.	B. All other Causes.	C. All Causes.
Raipore ...	385	40	...	10	...	48	...	...	7	...	...	...	...	13	...	3	121	103·89	210·40	314·29
Belaspore ...	75	1	1	...	...	1	...	...	1	...	...	...	...	4	...	...	8	...	...	...
Bandhara ...	294	26	...	6	1	9	...	...	1	...	2	...	1	...	...	...	46	88·44	68·02	156·46
Chaudah ...	212	3	...	...	...	2	...	...	...	...	...	...	...	...	...	...	5	14·15	9·43	23·58
Nagpore ...	790	54	...	54	1	43	...	...	5	...	1	...	3	1	2	9	173	68·35	150·64	218·99
Chindwara ...	149	...	...	1	...	6	...	...	1	...	...	...	..	1	...	...	9	...	...	60·40
Kowtah ...	40	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1	2	...	...	...
Sironcha ...	48	...	...	...	...	4	...	...	...	...	...	...	...	...	...	1	5	...	...	...
Mundla ...	60	...	...	1	..	1	...	1	...	...	...	...	...	...	...	...	3	...	...	...
Jubbulpore (Civil) ...	407	2	...	36	...	6	...	...	1	1	...	...	...	2	...	4	52	4·91	122·85	127·76
Jubbulpore (Thuggee)	518	...	...	1	...	5	...	...	3	...	...	...	...	32*	...	...	41	...	...	79·15
Dumoh ...	125	..	...	...	...	...	...	...	...	...	...	...	...	...	...	1	1	...	...	8·00
Saugor ...	278	...	...	...	...	7	...	...	...	...	1	...	...	1	1	1	11	...	...	39·57
Nursingpore ...	185	3	...	...	...	...	...	1	...	...	...	...	...	...	...	...	4	16·21	5·41	21·62
Lullutpore ...	158	...	...	...	...	2	...	...	...	...	...	...	...	2	...	...	4	...	...	25·32
Jhansi ..	264	...	...	1	...	...	...	...	...	...	...	...	...	1	...	1	3	...	...	11·36
Seonee ...	191	5	...	5	...	1	...	...	...	...	...	...	...	...	...	...	11	26·18	31·41	57·59
Baitool ...	162	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	3	...	...	18·52
Sehore ...	108	...	...	...	...	3	...	...	1	...	...	...	...	1	...	2	7	...	...	64·81
Hoshungabad ...	239	8	...	1	...	4	...	1	1	...	...	1	...	...	1	1	18	33·47	41·84	75·31
Nimar ...	124	1	...	1	...	3	...	...	1	...	...	...	...	...	...	2	8	8·07	56·45	64·52
Ajmere ...	318	...	...	6	...	4	...	...	...	...	...	...	...	...	1	...	11	...	...	34·59
Beaur ...	91	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	10·00
	5,221	143	1	123	3	152	...	3	23	1	4	1	4	58	5	26	547	27·39	77·38	104·77
Muttra ...	281	...	...	2	...	1	...	...	...	...	...	...	...	2	...	...	5	...	...	17·79
Agra ...	1,830	20	...	2	2	21	...	...	5	...	4	1	...	2	1	7	65	10·93	24·59	35·52
Secundra ..	103	...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	2	...	...	19·42
Etawah ...	192	1	...	2	...	1	...	...	...	...	...	...	...	...	...	...	4	5·21	15·62	20·83
Mynpoorie ...	304	...	...	3	...	3	...	...	...	...	...	...	...	1	...	...	7	...	...	23·03
Allyghur ...	282	...	...	3	...	2	...	...	2	...	...	...	...	1	...	1	9	...	...	31·91
Bolundshuhur ...	157	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	6·37
Shahjehanpore ...	286	...	...	5	1	1	...	...	1	...	...	...	...	...	...	...	8	...	...	27·97
Bareilly ...	1,697	1	...	52	3	33	...	...	...	...	...	...	...	2	...	4	95	·59	55·39	55·98
Budaon ...	202	...	...	1	...	1	...	...	...	...	1	...	...	...	...	...	3	...	...	14·85
Seharuupore ...	239	...	..	2	...	1	...	...	1	...	1	...	...	...	...	2	7	...	...	29·29
Bijnore ...	251	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	2	...	...	7·97
Deyrah ...	58	...	...	1	...	1	...	...	1	...	...	...	...	...	...	1	4	...	...	68·97
Almorah ...	126	...	...	...	...	2	...	...	1	...	...	...	...	2	...	...	5	...	...	39·68
Mozuffernuggur ...	113	...	...	1	...	...	...	...	...	...	...	...	...	...	1	1	3	...	...	26·55
Moradabad ...	330	...	...	2	1	3	...	...	1	...	...	...	...	2	1	1	11	...	...	33·33
Meerut ...	1,242	...	...	2	...	12	...	...	3	1	2	...	...	4	...	...	24	...	...	19·32
	7,693	22	...	80	8	82	...	...	15	1	9	1	...	16	3	18	255	2·86	30·29	33·15
Delhi ...	278	...	...	2	...	1	...	...	1	...	...	...	...	...	...	1	5	...	...	17·99
Rhotuk ...	209	...	...	2	...	...	...	...	1	...	...	...	...	...	...	...	3	...	...	14·35
Hissar ...	174	1	..	1	...	...	...	...	1	1	...	...	...	...	...	...	4	5·75	17·24	22·99
Sirsa ...	257	...	1	16	2	3	...	...	...	...	...	1	...	...	...	...	23	...	...	89·49
Kurnaul ...	69	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	28·99
Umballa ..	446	...	...	5	1	3	1	...	...	...	...	...	...	5	1	2	18	...	...	40·36
Gang at Jhugger ...	183	...	...	14	...	2	...	...	...	...	1	...	...	...	...	1	18	...	...	...
Loodianah ...	168	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	2	...	...	11·90
Jullundur ...	292	...	...	1	...	2	...	...	2	...	...	...	...	...	...	...	5	...	...	17·12
Ferozepore ...	435	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	1	...	...	2·30
Umritsur ...	535	...	...	28	1	2	...	2	...	...	...	...	...	...	...	3	36	...	...	67·29
Lahore ...	1,964	...	...	74	3	1	...	...	2	...	1	...	...	4	2	3	90	...	...	45·82
Lahore Female Jail ...	186	..	...	1	...	5	...	...	...	...	1	...	...	1	...	1	9	...	...	48·39
Sealcote ...	308	1	...	1	1	1	...	...	2	...	...	...	...	...	...	...	6	3·25	16·23	19·48
Dhurmsalla ...	154	...	...	9	...	3	...	...	...	...	...	1	...	...	...	2	15	...	...	97·40
Goordaspore ...	278	...	...	...	1	...	...	...	...	...	1	...	...	1	...	...	3	...	...	10·79
Goojranwalla ...	352	...	...	...	...	1	...	...	1	...	1	...	...	...	...	...	3	...	...	8·52
Goojrat ...	259	...	...	17	1	1	...	...	...	...	...	...	...	...	1	...	20	...	...	77·22
Shahpore ...	254	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chelum ...	259	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	3·86
Montgomery ...	307	...	...	7	...	...	...	...	2	...	...	...	...	1	...	...	10	...	...	32·57
Mooltan ...	925	...	...	2	...	...	...	...	1	...	...	2	...	...	...	2	7	...	...	7·57
Jhung ...	378	...	...	1	1	...	...	1	1	...	...	...	...	...	...	2	6	...	...	15·87
Dera Ghazee Khan ..	116	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	8·62
Dera Ismael Khan ...	282	...	...	...	1	1	...	...	1	...	...	...	...	...	...	2	5	...	...	17·73
Kohat ...	114	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Kunuoo ...	108	...	...	...	1	1	...	...	...	...	...	...	...	...	...	...	2	...	...	18·52
Rawul Pindee ...	852	...	...	8	1	1	...	...	...	...	...	...	...	...	...	1	11	...	...	12·91
Peshawur ...	358	...	...	34	1	20	1	...	...	...	...	...	...	...	1	3	60	...	...	167·60
	10,482	2	1	227	16	50	2	3	15	1	5	4	...	12	5	23	366	·19	34·73	34·92
Bengal Presidency ...	54,337	390	23	690	54	1262	16	25	142	15	72	41	8	190	36	169	3133	7·19	50·47	57·66

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* Old age.

JAILS OF THE BENGAL PRESIDENCY, 1865.

XII.

DETAIL of the ADMISSIONS and DEATHS of the JAIL POPULATION of each PROVINCE.

A Summary of the Annual Returns of the Jails of the Presidency.

CAUSES OF ADMISSIONS AND DEATHS.	Bengal Proper and Assam. Strength ... 14,580 Admissions ... 23,901 Deaths ... 873		Behar, Benares, Oude and Cawnpore. Strength ... 16,326 Admissions ... 14,872 Deaths ... 1,109		Nagpore and Central India. Strength ... 5269 Admissions ... 8471 Deaths ... 549		Agra, Meerut, and Rohilcund. Strength ... 7688 Admissions ... 5163 Deaths ... 257		Punjab. Strength ... 10,543 Admissions ... 10,250 Deaths ... 372	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Variola	43	17	45	4	1	1	5	...	4	1
Varicella	801	...	29	...	38	...	2	...	19	2
Morbilli	...	...	...	...	...	...	...	...	4	...
Tonsillitis	8	...	3	...	8	...	7	...	10	...
Parotitis	30	...	8	1	2	...	5	...	16	...
Febris, Intermittens	9,500	29	4,624	67	2827	16	1191	7	5047	57
,, Remittens	452	40	603	108	502	105	283	51	587	120
,, Continua	129	7	21	1	5	2	747	22	282	51
Ophthalmia	213	2	609	40	113	...	104	...	167	...
Erysipelas	14	2	10	1	...	...	5	...	10	...
Erythema	1	...	...	...	...	...	...	...	...	...
Anthrax	25	...	7	...	6	...	5	...	10	...
Furunculus	29	...	30	...	48	...	1	...	26	...
Gangrœna	2	2	16	5	...	...	1	...	2	1
Influenza	15	...	...	...	...	...	1	...	...	...
Dysenteria	2,294	247	1831	245	512	79	338	38	444	21
Diarrhœa	2,628	105	2082	394	648	74	483	44	386	28
Cholera	351	147	193	72	266	143	42	22	5	2
Rheumatismus	729	3	297	8	237	5	93	...	157	2
Syphilis, Primaria	170	...	134	...	66	...	58	1	85	...
,, Secundaria	56	...	70	1	22	...	77	...	35	...
Iritis Syphilitica	1	...	...	...	...	...	...	...	...	...
Gonorrhœa	43	...	50	...	14	...	10	...	16	...
Phymosis	15	...	10	...	6	...	5	...	6	...
Bubo	76	...	41	...	8	...	16	...	19	...
Orchitis	21	...	21	...	7	...	5	...	2	...
Strictura Urethræ	16	1	17	1	6	...	3	...	7	...
Condyloma	1	...	...	...	...	...	...	...	...	...
Verrucæ	3	...	...	...	...	...	...	...	...	...
Lepra	49	4	33	2	12	2	1	...	3	...
Elephantiasis	17	...	...	...	...	...	...	...	...	...
Purpura et Scorbutus	163	4	16	...	62	4	...	...	101	...
Ebriositas	1	...	...	...	...	...	...	...	...	...
Bronchocele	2	...	6	...	...	...	...	...	...	...
Aphthæ	14	...	...	...	...	...	...	...	1	...
Porrigo	8	...	2	...	5	...	1	...	6	...
Scabies	577	...	232	...	216	...	79	...	47	...
Vermes	5	...	5	...	1	...	4	...	8	...
,, Tænia	...	...	2	...	1	...	1	...	5	...
,, Dracunculus	...	...	1	...	44	...	1	...	94	...
Anœmia	45	6	21	5	3	...	3	2	14	...
Anasarca	104	25	12	4	6	1	...	...	4	2
Carcinoma	2	2	2	...	1	...	...	...	1	...
Lupus	...	...	1	...	...	...	...	...	...	...
Scrofula	8	...	8	1	...	...	5	1	1	...
Abscessus Psoanus	1	1	...	...	...	...	...	...	...	...
Phthisis Pulmonalis	77	42	10	9	5	4	13	9	10	6
Hæmoptysis	32	4	7	...	1	...	2	...	8	...
Encephalitis	2	1	1	1	...	...	1	1	1	1
Myelitis	...	...	...	...	...	...	...	...	1	...
Meningitis	3	2	...	...	...	...	...	...	...	...
Apoplexia	18	15	24	15	3	3	10	8	31	17
Paralysis	20	2	6	2	3	...	1	...	9	...
Tetanus	4	1	4	1	...	...	...	...	2	1
Epilepsia	29	1	27	1	6	3	11	...	14	1
Delirium Tremens	...	...	3	...	...	...	...	...	1	...
Hysteria	12	...	1	...	...	...	...	...	1	...
Mania	87	3	30	...	16	...	14	1	21	...
Dementia	10	...	...	...	1	...	...	...	...	...
Cephalœa	20	...	15	...	24	...	4	...	10	...
Neuralgia	36	...	9	...	13	...	2	...	2	...
Otitis	51	...	37	1	35	...	6	...	19	...
Odontalgia	13	...	16	...	11	...	12	...	8	...
Cœcitas	10	...	2	...	2	...	1	...	...	...
Amaurosis	...	...	...	...	...	...	...	...	2	...
Cataracta	4	...	...	...	...	...	1	...	1	...
Nyctalopia	2	...	...	...	...	...	...	...	...	...
Pericarditis	3	...	1	1	1	1	...	...	1	...
Endocarditis	8	8	3	2	...	...	1	1	...	...
Aneurisma	...	...	...	...	...	...	...	...	...	1
Syncope	1	...	...	...	...	...	...	...	...	...
Varix	3	...	...	...	...	...	...	...	...	...
Phlebitis	1	...	1	...	...	...	...	...	...	...
Epistaxis	7	...	3	1	4	...	...	...	2	1
Palpitatio	...	...	...	...	1	...	...	...	...	...
Angina Pectoris	1	1	...	...	1	...	...	...	...	...
Laryngitis	8	1	5	2	...	...	2	...	2	...
Bronchitis	407	10	127	6	123	10	111	4	141	3
Pleuritis	67	4	23	1	23	1	62	2	25	1
Pneumonia	147	42	42	11	27	8	42	7	25	8
Asthma	71	5	74	5	22	10	11	2	14	3
Stomatitis	15	...	6	...	1	...	...	...	...	...
Gastritis	4	1	2	...	1	...	...	...	6	...
Enteritis	4	2	2	1	...	...	2	2	8	2
Peritonitis	4	4	5	3	...	...	1	1	1	1
Obstipatio	272	1	71	1	17	...	3	...	197	...
Ileus	1	1	1	1	3	2	1	1	...	...
Hernia	15	...	2	...	1	...	1	...	2	...
Dyspepsia	378	...	147	...	85	...	57	...	69	...

CAUSES OF ADMISSIONS AND DEATHS.	Bengal Proper and Assam.		Behar, Benares, Oude and Cawnpore.		Nagpore and Central India.		Agra, Meerut, and Rohilcund.		Punjab.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Colica	328	...	304	5	161	...	118	...	311	2
Hæmatemesis	2	...	2	...	1	...	...	...	1	1
Meiœna	...	..	...	...	...	...	...	...	4	3
Hæmorrhois	54	..	48	...	16	...	16	...	29	...
Fistula in Ano	12	...	7	...	...	...	4	...	1	...
Splenitis	260	15	46	5	21	3	11	...	50	3
Hepatitis	30	11	10	4	6	...	9	...	15	2
Icterus	32	1	20	1	19	2	11	...	35	...
Ascites	22	6	4	2	1	...	1	1	4	2
Nephritis	8	1	4	2	1	1	10	4	7	1
Albumenuria	...	...	...	...	...	...	...	...	...	...
Hæmaturia	1	...	3	1	1	1	11	...	2	...
Ischuria	5	...	3	3	2	...	...	...	9	2
Diuresis	...	...	...	...	...	...	...	...	2	...
Diabetes	1	1	...	...	1	1	...	...	...	...
Calculus Vesicæ	1	...	1	...	...	...	1	1	5	3
Cystitis	5	1	1	1	...	...	2	2	2	...
Fistula in Perineo	1	1	...	...	...	...	...	...	...	...
Orchitis	25	...	7	1	9	...	1	...	4	...
Hydrocele	42	...	21	...	1	...	1	...	1	...
Partus	8	...	13	...	6	...	2	...	15	...
Abortus	5	2	2	...	4	...	...	...	8	...
Metritis	2	...	...	...	...	...	...	...	...	...
Paramenia	...	...	...	...	4	...	...	...	...	...
Menorrhagia	1	...	2	...	1	...	1	...	4	1
Leucorrhœa	...	...	2	...	...	...	...	...	1	...
Arthritis	2	...	2	...	...	...	...	...	...	...
Synovitis	10	...	...	...	1	...	5	...	3	...
Ostitis	3	...	1	...	...	...	5	...	1	...
Pleurodynia	1	...	1	...	...	...	...	...	1	...
Lumbago	60	...	10	...	...	...	28	...	9	...
Necrosis	2	...	2	1	1	...	...	...	...	...
Caries	1	...	1	...	...	...	...	...	...	...
Contractura	1	...	...	...	...	...	...	...	1	...
Skin Diseases	115	...	118	...	142	...	42	...	59	...
Whitlow	35	...	36	...	16	...	2	...	76	...
Phlegmon and Abscess	822	1	1042	4	610	2	431	3	554	...
Ulcer	778	7	579	6	945	6	171	...	417	...
Tumour	11	...	2	...	3	...	4	...	4	...
Atrophy and Debility	148	17	80	16	75	54	30	14	96	11
Burning	40	...	17	...	7	...	14	...	8	...
Dislocation	4	...	7	...	8	...	3	...	...	...
Subluxation	7	..	12	...	1	...	4	...	4	...
Fracture	18	...	92	4	2	...	35	2	17	1
Contusion	341	5	494	6	186	2	173	1	143	2
Concussion of Brain	1	1	...	...	...	...	...	...	...	...
Gunshot wound	5	3	3	3	...	...	...	...	1	1
Incised wound	99	2	60	2	28	2	10	...	33	1
Amputation	...	...	...	...	1	1	...	...	...	...
Poisoning	2	...	...	...	...	...	1	1	...	...
Snake bite	1	...	...	...	...	...	...	...	...	...
Drowning	...	...	...	2	...	...	...	1	...	...
Suicide	1	3	...	...	...	...	...	...	1	3
Rupture of Spleen	...	...	...	1	...	...	...	...	...	...
,, of Aorta	...	...	...	1	...	...	...	...	...	...
Punished*	34	...	14	...	29	...	9	...	60	...
Malingering	...	...	...	...	...	...	4	...	...	...
Not specified	...	...	...	14	38	...	4	...	7	...

The Deaths out of Jail are included in this Table.

* The Admissions on account of punishment are in many instances unregistered.

4. SUMMARY FOR 1865.

DETAIL of the ADMISSIONS and DEATHS of the EUROPEAN and NATIVE ARMIES, and the JAIL POPULATION of the BENGAL PRESIDENCY.

CAUSES OF ADMISSIONS AND DEATHS.	ADMITTED INTO HOSPITAL, AND DIED IN AND OUT OF HOSPITAL.											
	EUROPEAN ARMY.		NATIVE TROOPS.								JAIL POPULATION.	
	Bengal Presidency.		Bhootan & Eastern Bengal.		Upper Provinces.		Central India Force.		Punjab Frontier Force.		Bengal Presidency.	
	Average Strength 37,528 Admitted ... 57,783 Died ... 906		Strength 11,064 Admitted 30,977 Died ... 603		Strength 28,187 Admitted 35,375 Died ... 295		Strength ... 4,747 Admitted ... 4,678 Died ... 63		Strength 10,808 Admitted 12,093 Died ... 79		Average Strength 54,406 Admitted ... 62,657 Died ... 3,1	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Variola	96	13	10	1	60	9	1	...	15	6	103	2
Varicella	18	.....	...	...	7	..	1	...	2	...	889	2
Morbilli	6	.....	13	...	5	...	...	...	4	..	4	... ...
Scarlatina	1	... ..	...	...	...	...	...	...	1	..	.....	. ...
Tonsillitis	582	1	20	1	41	...	15	...	30	...	36	... ...
Parotitis	7	.....	18	1	34	...	...	...	14	...	61	1
Fehris, Intermittens	13,335	28	16,766	101	17,306	70	1,641	9	5,436	6	23,189	17
,, Remitteus	1,999	62	626	41	209	23	35	1	198	9	2,427	42
,, Continua	3,976	50	10	2	49	6	14	1	43	6	1,164	8
Ophthalmia	1,145	.....	141	...	753	...	255	...	243	..	1,206	12
Erysipelas	34	1	...	...	7	...	5	...	19	1	39	3
Erythema	6	.....	3	...	2	...	...	..	...	...	1	... .
Anthrax	7	1	5	...	8	...	1	...	4	...	53	.
Furunculus	518	... .	21	..	95	...	71	...	141	...	134	.
Gangrœua	.....	.....	1	1	...	...	...	...	1	...	21	8
Pyœmia	1	.....	...	...	...	...	...	..	...	...	.....	
Influenza	89	.....	26	...	42	...	9	...	120	...	16	...
Dysenteria	1,471	89	3,326	108	2,176	18	148	5	494	8	5,419	60
Diarrhœa	3,543	29	2,777	67	1,234	18	157	4	339	4	6,227	67
Cholera	169	118	294	150	71	39	58	25	8	2	857	38
Diphtheria	3	1	...	...	...	...	...	..	1	...	...	.....
Rheumatismus	2,508	...	812	7	1,294	8	150	3	324	.	1,518	18
Syphilis, Primaria	2,433	.....	170	...	495	2	97	...	87		513	1
,, Secundaria	1,040	3	70	4	138	4	15	...	54	...	260	1
Iritis Syphilitica	38	.....	2	...	2	...	...	..	...	...	1	. ...
Gonorrhœa	3,034	.....	54	...	259	...	69	...	75	...	133	.....
Phymosis	25	.....	3	...	18	...	3	...	2	...	42	... .
Bubo	1,062	.....	90	...	323	...	26	...	39	...	160	... .
Orchitis	263	.....	24	...	117	...	33	...	17	...	56	.....
Verrucæ	21	.....	...	..	...	...	...	...	...	...	3	.
Condyloma	10	.....	...	...	1	...	...	...	...	...	1	.. ...
Lepra	.....	.....	...	...	...	...	...	...	...	...	98	3
Elephantiasis	.....	.....	...	...	...	..	...	..	...	...	17	.....
Hydrophobia	2	2	...	...	1	1	...	...	...	...	.....	.....
Scorbutus et Purpura	38	2	294	14	38	2	7	1	24	...	342	8
Ebriositas	463	8	2	...	2	1	3	...	1	...	1	.....
Bronchocele	.....	.....	15	...	4	...	...	...	...	...	8	. ...
Aphthæ	3	.. ...	5	...	2	...	...	...	...	.	15	. .
Porrigo	6	.....	1	...	...	...	5	...	4	...	22	. .
Scabies	70	.....	250	...	374	...	58	..	22	...	1,151	. .
Vermes	66	.....	...	...	5	...	...		...	...	23	.
,, Tænia	215	.....	2	...	...	...	1	.	4	..	9	. .
,, Dracunculus	2	.....	9	...	48	...	134	.	55	.	140	..
Anœmia	244	4	12	...	23	1	1	..	27	..	86	1
Anasarca	27	3	29	7	8	1	...	..	4	2	126	2
Scirrhoma	4	4	...	...	2	...	...	.	...	...	6	1
Lupus	2	.....	...	...	...	...	...	...	...	...	1	... ...
Podagra	3	.....	...	...	1	...	2	...	...	...	.....	.....
Scrofula	77	.....	3	...	14	1	...	...	6	...	22	2
Phthisis Pulmonalis	247	52	7	6	26	7	1	..	12	3	115	7
Hœmoptysis	77	.....	...	..	8	1	...	...	...	...	50	1
Abscessus Psoanus	1	1	...	...	...	..	...	...	...	.	1	1
Encephalitis	2	2	...	...	...	...	...	...	1	.	5	1
Meningitis	8	2	1	1	3	1	...	.	...	...	3	2
Myelitis	1	.....	...	...	...	...	...	.	...	...	1	...
Apoplexia	222	121	7	5	11	3	1	.	9	4	86	5
Paralysis	67	8	4	...	29	1	1	..	11	..	39	1
Tetanus	1	.....	1	..	1	...	...	..	1	1	10	2
Epilepsia	140	2	11	1	25	..	1	..	2	...	87	6
Delirium Tremens	128	15	...	...	1	...	2		...	..	4	... ...
Chorea	3	.....	...	.	...	...	..	...	...	...	.....	
Hysteria	3	... ...	...	...	...	...	...	...	...	...	14	... .
Mania	25	... .	10	...	8	...	...	...	3		168	1
Monomania	12	.....	...	...	...	...	...	.	...		.....	
Melancholia	4	.....	...	...	...	..	...	.	...	.	.....	
Dementia	43	1	...	.	...	...	...	...	2		11	... ...
Cephalœa	341	.....	20	...	33	...	27	...	22		73	
Vertigo	3	.....	1	..	2	...	...	...	...	...	... ...	
Dysecœa	43	... ..	2	...	6	...	2	...	1		... ...	
Neuralgia	168	.....	26	.	104	...	23	..	51	..	62	
Sciatica	9	... .	3	...	4	...	...	...	11		.	
Odontalgia	7	.....	11		8	...	2	...	19		60	.
Otitis	309	.....	81	...	199	1	17	1	74		148	1
Amaurosis	3	.....	7	..	6	...	...	...			2	
Cœcitas	7	.....	...	.	...	...	...		1		21	
Nyctalopia	.....	... ...	24	...	7	...	2	...	1		2	
Pericarditis	31	2	2	1	9	1	2	1	...		6	2
Morbus Cordis	295	29	3	3	2	1	...	.	2		12	14
Palpitatio	39	....	1	..	3	...	...	..	...		1	...
Aneurisma	26	11	...		...		...		1		...	1
Syncope	8	.....	...		...		1		1		1	
Varix	21	... ...	...	...	4	...	...		...		3	
Phlebitis	1	.....	2		1	.	...		...		2	
Epistaxis	10	1	2		2	..	1		2		16	2
Angina Pectoris	14	1	...		...	.	...		...		2	
Apoplexia Pulmonum	.....	1	...		...	..	...		...		....	
Laryngitis	10	1	3	1	4	1	...		8		17	
Bronchitis	1,738	11	438	6	642	15	130	3	241	2	909	
Pleuritis	141	4	31	1	90	3	19	1	51	1	200	

CAUSES OF ADMISSIONS AND DEATHS.	ADMITTED INTO HOSPITAL, AND DIED IN AND OUT OF HOSPITAL.											
	EUROPEAN ARMY.		NATIVE TROOPS.								JAIL POPULATION.	
	Bengal Presidency.		Bhootan & Eastern Bengal.		Upper Provinces.		Central India Force.		Punjab Frontier Force.		Bengal Presidency.	
	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.	Admitted.	Died.
Empyema	1	1										
Pneumonia	116	22	21	5	70	13	5	1	75	12	283	7
Asthma	29	1	31		63	2	3		6		192	
Aphonia	2											
Stomatitis	22	1	5		20	1			4	1	22	
Gastritis	14	1	4	1	1				3	1	13	
Enteritis	12	4	1		5	1	1		1	1	16	7
Peritonitis	13	7			2	1	2	2	2	2	11	
Ileus	3	1			1	1					6	
Obstipatio	139		14		44	1	13		42		560	
Hernia	25		5		11	1					21	
Dyspepsia	1,217	1	105		293	3	122		92	2	736	
Colica	463	1	223	1	426		50		342		1,252	
Hæmatemesis	12	1	3						1		6	
Melæna	1	1									4	
Hæmorrhois	398		35		130		4		26		163	
Fistula in Ano	41		2		9		2		3		24	
Splenitis	250	5	123	4	158	4	11	1	46		388	
Hepatitis	2,203	112	27	3	51	7	3		18	2	70	
Icterus	203	1	17	1	35		13		19		117	
Cholelithus	1											
Cirrhosis	1	1										
Ascites	11	2	9	2							32	
Nephritis	68	5	1		21		2		7		30	
Hæmaturia	6		2		2						18	
Ischuria	20		3		1		2		6		19	
Enuresis	14		1						1			
Diuresis	4										2	
Diabetes	2				5				1		2	
Cystitis	23		1		8	1					10	
Strictura Urethræ	142	1	6	1	17		1		1		49	
Fistula in Perineo	3		1						1		1	
Calculus Vesicæ	1				4						8	
Varicocele	8											
Orchitis	671		24		91		10		17		46	
Hydrocele	45		5		16						66	
Partus											44	
Abortus											19	
Metritis											2	
Paramenia											4	
Menorrhagia											9	
Leucorrhœa											3	
Arthritis	24		2		5		4		2		4	
Synovitis	86		1		6		2	1	5		19	
Pleurodynia	84		1		2		1		1		3	
Lumbago	118		77		135		8		100		107	
Necrosis	15						1		5		5	1
Caries	5	2			8						2	
Contractura	6										2	
Periostitis	78		1		5		2		5		10	
Exostosis	5											
Skin Diseases	357		266		328		34		143		476	
Phlegmon and Abscess	1,948	6	563	1	2,036	4	300	1	735		3,459	10
Whitlow	153		13		56		10		48		165	
Ulcer	1,637	1	1,086	22	1,395		221		612		2,890	19
Tumour	23		1		11				3		24	
Debility and Atrophy	441	8	155	9	153	6	24	1	30	1	429	114
Burning	61	1	36		94		14		23		86	
Dislocation	45		3		21		3		16		22	
Subluxation	755		54		156		31		80		28	
Fracture	135	4	13	1	68		11	1	26		164	
Contusion	2,099	4	898	1	2,065	3	417		888	1	1,337	16
Concussion of Brain	3				6	1					1	
Gunshot wound	22		98	15	11	1	5		3		9	
Incised wound	352		230	6	129		26		24		230	
Amputation	7	1									1	
Poisoning	20				2	1			3	1	3	
Snake bite	1				3	1			2		1	
Scorpion bite	1											
Suicide	4	12			3	3					2	6
Drowned		8										
Asphyxia		2										
Death by Lightning		1										
Rupture of Spleen												
,, of Aorta												
Footsore	152		178		663		73		215			
Punished	22		28		22				25		146	
Malingering											4	
Not specified	70		2		2						49	14
Died absent from their Regiments				211		129		6		56		

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21.h.17 (8)

1867.

VICTORIA.

CENTRAL BOARD OF HEALTH.

ELEVENTH ANNUAL REPORT.

PRESENTED TO BOTH HOUSES OF PARLIAMENT BY HIS EXCELLENCY'S COMMAND.

By Authority:

JOHN FERRES, GOVERNMENT PRINTER, MELBOURNE.

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REPORT.

To His Excellency Sir John Henry Thomas Manners Sutton, *K.C.B., &c., &c., &c.*

May it please Your Excellency,—

We, the Central Board of Health, constituted under the provisions of the Act 18 Vic., No. 13, beg to submit to Your Excellency our Eleventh Annual Report on Sanitary Administration in the Colony of Victoria.

In presenting our Report for the Year 1865, we regret to have again to record the failure of our efforts to procure those amendments in the laws relating to the public health, the necessity for which we have so often pointed out. In our last Report, we ventured to express our hope that the speedy passing into law of the measure which we had prepared with this object, would soon place in the hands of the Local Boards of Health powers enabling them to deal satisfactorily with those evils affecting the public health which they were unable to cope with under the limited powers conferred on them by the present defective enactment; and it was our expectation that, in chronicling our proceedings for the year 1865, we should have been enabled to report on the working of those amendments in the law which we have, time after time, shown to be imperatively called for. The lapse of another year, however, during which we have had to administer the present defective Statute, has served only to illustrate more and more its many and important deficiencies, and to show more and more how urgent is the necessity which exists for its amendment.

We have not, however, pending the amendment of the existing law, relaxed our efforts to impress unceasingly on the various Local Boards of Health the great importance of giving their constant attention to the enforcement of such sanitary measures as even the present law places it in their power to compel, and we are much gratified in being enabled to state that generally our instructions and advice to those bodies have met with a proper amount of attention, and that, as a rule, the Local Boards of Health continue to evince a praiseworthy desire to avail themselves of the limited powers placed at their disposal by the present Statute. We, therefore, feel assured that the Local Boards generally would hail with satisfaction the enactment of those amendments in the law which we have proposed, and which would enable them effectively to deal with those nuisances and causes of injury to the public health which in many cases they are now powerless to prevent.

We still indulge the hope that before long we shall see passed into law those amendments which our experience of the working of the present Statute abundantly proves to be urgently demanded, and, pending the attainment of this long-looked-for and much-desired result, we propose at present to confine ourselves to a review of our proceedings during the year as regards their general relation to the public health of the colony, referring only to individual districts where such were for the first time inspected under our directions, or where any special circumstances call for particular remark.

During the year 1865 the provisions of the Public Health Act were extended, by proclamation in the *Government Gazette*, to the boroughs of Craigie, Echuca, Jamieson, Raywood, Sebastopol, and Wood's Point, and to the shires of Stawell and Yackandandah. The provisions of the Act were also extended during the year to the whole of the shires of Avoca, Kyneton, and Maldon, in portions only of which districts it had previously been in operation. There were thus, at the close of the year 1865, sixty-six separate districts, including every town of any importance in the colony, in which the Public Health Statute was in operation and administered by a Local Board, and of these, forty-seven towns were visited and inspected by our superintending inspector during the year. Of the places inspected, the boroughs of Portland, Belfast, Warrnambool, and Hamilton, were visited by our superintending inspector for the first time, and with respect to these towns, therefore, we propose to offer a few observations on their sanitary condition, and the measures which, so far as we have been informed, have been since taken by the local authorities to remedy those sanitary defects which came under notice at the time of our inspection, and to which, on receiving our inspector's reports, we drew the attention of the Local Boards concerned.

PORTLAND.

In our last mention of the town of Portland (in our Report for the year 1863), we stated that the reports of the Local Board of Health led us to conclude that some attention had been given by the local authority to the sanitary requirements of the district, more especially in regard to improved construction of cesspits, drains, &c. This conclusion was confirmed by the report of our superintending inspector, which showed that very considerable progress had been made in the prosecution of those public works of street formation and drainage which conduce so much to the cleanliness and salubrity of a town; but, notwithstanding this attention to the actual construction of sanitary works, the inspection now under notice disclosed an almost total neglect of such important sanitary details as the maintenance of cleanliness on private premises, the removal or abatement of nuisances, and the prevention of offensive practices injurious to the public health. We accordingly made a strong representation to the Local Board of Health, in the early part of the year, as to the necessity for attention to these very important sanitary requirements, and we were much gratified to find, by the subsequent reports of the Local Board, that our remonstrances had the effect of inducing a very praiseworthy degree of activity on their part in the removal of those nuisances and causes of offence or injury to the public health, the existence of which we had brought under their notice. The reports of the Local Board of Health which we have received since our inspection of the town, show that they are now fully alive to the necessity for a stricter enforcement of sanitary regulations, and that they have appointed an inspector of nuisances, who served as many as 110 notices to remove nuisances and causes of injury to the public health during the last half of the year. The necessity for this action on the part of the Local Board is well shown by the result, as given in their last report, namely, the cleansing and repairing (and in many instances the construction of new ones) of 110 privy cesspits, and the removal of 150 loads of refuse from private premises, during the last half of the year.

We would particularly point to this inspection of Portland as markedly illustrating the advantages arising from the periodical inspection of the towns of the colony by the central authority. It is obvious, from this instance, that the periodical reports of the Local Boards cannot be always relied on for such detailed information as will enable us to ascertain to what extent the provisions of the Public Health Act are enforced, to draw the attention of the local authorities to existing nuisances or matters of defective sanitary regulation, and to indicate the necessary remedies. Nuisances and sources of injury to the public health will often attain a magnitude startling to one not accustomed to their presence, while to those on the spot their gradual growth prevents, in too many cases, their recognition altogether, until possibly the appearance of some epidemic arouses attention to their existence, and induces some spasmodic efforts for their removal. To

the inspection of the town of Portland made under our direction, is clearly owing the removal of the many nuisances and causes of offence to which we have referred, and the arousing of the Local Board to the great importance of that regular attention to the details of sanitary requirement, without which the mere construction of works of street improvement and drainage is of but little avail in the prevention of nuisances. The fact that, of the large number of notices served by the local inspector of nuisances, all were at once complied with, save in one instance, indicates a willingness on the part of the residents of the borough to comply with the requisitions of the local sanitary authorities, and gives an assurance that the Local Board of Health have only to exercise ordinary vigilance to keep their town free at all events from that large class of removable nuisances which the regular enforcement of sanitary regulations will always prevent.

The existence of such extensive accumulations of refuse on private premises in the town as we have noticed, pointed forcibly to the want of some appointed and recognised place for the reception of house refuse; and although such refuse matter is of ready demand for fertilising purposes in the neighborhood of the town, we pointed out to the Local Board of Health that a manure depôt, in which it could be collected, and the existence of which would remove any excuse for accumulating filth or refuse matter in private yards, was, nevertheless, a positive sanitary necessity.

During the first half of 1865 the health of the borough was remarkably good, and the mortality small, but in the last six months of the year there was a large amount of sickness, principally amongst children, attended with increased mortality. Diphtheria, from which thirteen deaths are reported by the Local Board as occurring during the last mentioned period, was very prevalent at one time; but nearly all the cases occurred in the suburbs, where the population is scattered, and at the close of the year it had gradually disappeared from the town.

BELFAST.

The first inspection of Belfast made under our direction, in April, also revealed the existence of very considerable neglect of sanitary details. We had occasion, in our Report for 1863, to advert to the very lamentable apathy which then existed on the part of the Local Board of Health of this town in regard to the sanitary interests of their district; and although we have reason to believe that a marked improvement has since taken place in this respect, we were sorry to find that our inspection of the town disclosed the existence, to a large extent, of preventable nuisances and sources of injury to the public health. We accordingly communicated at considerable length with the Local Board, pointing out those sanitary deficiencies which had come prominently under the notice of our inspector, and indicating the means by which those defects might be removed, and a better sanitary condition of their town attained. The reports which we have since received from the Local Board of Health do not, however, inform us to what extent our suggestions and recommendations have been carried out, those reports being defective in not giving that "Return of Nuisances dealt with," which is so important a feature in those documents; and as we find that there is still in existence the objectionable arrangement to which we adverted in our last mention of this town, whereby the local inspector of nuisances has the duties of another borough office to attend to, there is reason to fear that little, if any, improvement has been made in the direction of that frequent and regular inspection of the town which is so essential to its maintenance in a proper sanitary condition. The Local Board, indeed, in one of their reports for the year, state that "the cesspools and receptacles for filth in private premises are not interfered with by the Local Board;" an omission which evinces either a neglect on the part of the Local Board which is very much to be regretted, or an ignorance of their proper duties which is very much to be wondered at, after the distinct instructions as to their duties and functions with which we have from time to time furnished them. The soil of the site of this town is in most parts of a very porous nature, readily absorbing drainage and surface water, so that it is no matter of surprise that the Local Board should state, in

reporting on their sources of water supply, which is principally from wells, that such supply is "liable to pollution by percolation." It is a matter of surprise, however, as well as of regret, that the Local Board of Health, while admitting the liability of their water supply to pollution in this manner, should take no steps whatever to insure that proper construction of privy cesspits, and their maintenance in proper condition by regular cleansing before they become full, which alone can prevent the percolation or overflow of the contents of those receptacles, and the consequent saturation of the soil of the town, and the pollution of their sources of water supply.

The most serious individual nuisance in the town of Belfast arises from the condition of an unoccupied piece of land in the centre of Block No. 7, which, being lower than the surrounding ground, is the receptacle for the drainage of the adjoining houses, while, from its situation, there are no means of readily draining the partial swamp which has thus been formed. On the matter being brought under our notice, we wrote to the Local Board of Health, urging them no longer to neglect enforcing the powers which the 22nd section of the Public Health Statute placed at their disposal, and which, we presumed, would enable them to deal with this particular evil; and in this instance we must give the Local Board credit for a prompt attention to our communication, and for a desire to rid their town of this serious nuisance. It appeared, however, that the only way to deal with this nuisance effectually, was to fill up the ground in question to the level of the adjacent streets, a work which would cost at least £200, and the owners of the allotment being absent from the colony, the Local Board were, in consequence of a defect in the clause of the Public Health Act we have mentioned, unable themselves to have the work legally carried out. The Local Board of Health having taken counsel's opinion on the case, communicated with us, pointing out the defect in the law to which we have alluded, and the difficulty they encountered in consequence in endeavoring to carry out our suggestions. We have accordingly, in our proposed amendments of the existing law, remedied the defect we have referred to, and, pending the enactment of the amended measure, we very much fear nothing can be done to get rid effectually of the very serious nuisance we have mentioned.

WARRNAMBOOL.

In our last mention of the sanitary condition of the town of Warrnambool (in our Report for 1863), we were enabled to report that a commendable amount of attention to sanitary requirements had latterly been shown by the Local Board, whose attention we had previously directed to the grave responsibility devolving on them if they should fail to remedy those sanitary defects which we brought under their notice as then existing in their town, and to which there is no doubt that much of the serious mortality which occurred from zymotic disease in the early part of 1862 was to be attributed. We are much pleased now in being able to report continued activity on the part of the Local Board in regard to the suppression of nuisances, and that, as a consequence of the improved sanitary condition of the town, the public health has for the last two years maintained a fair standard. The report of our superintending inspector on his inspection of the borough in April, 1865, however, revealed the existence of several sanitary defects, and showed that much remained to be done before the town could be said to be in a proper sanitary condition; and on receipt of our inspector's report we drew the attention of the Local Board of Health to such nuisances and matters of defective sanitary regulation as had come prominently under notice at the time of our inspection, pointing out the means by which a remedy was to be obtained, and urging on the Local Board the necessity for increased activity on their part in the enforcement of the powers entrusted to them for the sanitary regulation of the borough. The subsequent reports of the Local Board of Health show that some attention has been paid to our representations, a considerable number of nuisances having been removed or abated during the year, on action taken by the local inspector of nuisances. The Local Board also report that they purpose carrying out a recommendation which we made to them in regard to the slaughter-yards,

and erecting proper abattoirs at a considerable distance from the town, in lieu of the present place, which is not only badly constructed, and consequently difficult to keep free from offence, but is so situated that the offensive effluvia therefrom are wafted over the town by the prevailing winds.

The greatest sanitary evil of the town, however, is the faulty construction of privy cesspits, those receptacles being in almost every instance destitute of any provision whatever against the percolation of their contents into the adjacent ground. As in Belfast, the sandy nature of the soil admits of the absorption of the contents of those receptacles so rapidly as to prevent the formation of *visible* nuisance, unless where very great carelessness or neglect is evinced; but this very absorbent quality of the soil of the site of a town, which, like Warrnambool, is dependent for its water supply on wells or rainfall, would, it might reasonably be supposed, have led the inhabitants to adopt long ago such a construction of cesspits as would prevent the pollution of their main source of water supply with matter so noxious as the emanations from those receptacles. Nothing, however, had been done up to the time of our inspection towards the adoption of any improved plan of construction, although we gather from our inspector's report that the inhabitants of the town had been aroused to the danger of drinking the polluted well-water, as we find that several houses had of late been provided with tanks in which to collect sufficient rain-water for domestic purposes. A very significant fact in connection with this subject is, that the local Officer of Health in part attributes the very much improved state of the public health, during the last two or three years, to the more extended use of tanks as a means of obtaining water supply, and the proportionate disuse of the polluted water obtained from the wells in the town. The fact that the Local Board of Health for Warrnambool have recently applied to us for information and suggestions as to the best mode of constructing earth-closets, induces us to hope that they are at length alive to the necessity for taking some active measures to put a stop to that wholesale saturation of the soil of their town with offensive matter which is certain to result from a continued toleration of the present imperfect cesspit system; and as the reports of the Local Board for 1865 show that the numerous notices to remove nuisances which were served by their inspector during the year, were in every instance complied with, without the necessity for recourse to further measures, we apprehend that the Local Board of Health have only to earnestly exert themselves to secure, with but little opposition or difficulty, the much needed sanitary reform we have indicated.

HAMILTON.

The visit of our superintending inspector to the western towns afforded an opportunity for making an inspection of the sanitary condition of the borough of Hamilton, to which town the provisions of the Public Health Act were extended in 1860, but which had not yet been inspected under our direction.

The periodical reports of the Local Board of Health hitherto received by us, appeared to warrant the conclusion that a fair amount of attention was paid to the sanitary requirements of the town, and, considering the rural character of the borough, we did not deem it necessary to do more than place the Local Board of Health in possession of general instructions in regard to sanitary administration. Our recent inspection, however, satisfied us that the town was in anything but a creditable sanitary condition; and as experience had lately shown that epidemic diseases visiting the district had evinced a disposition to assume a severe type, we made a special communication to the Local Board, pointing out those particular sanitary defects which our inspection of the town had disclosed, and urging on them the necessity for greater attention to those measures of sanitary regulation so essential to the maintenance of the public health. The principal matters of sanitary deficiency to which we felt it necessary to direct the attention of the local authorities, were—the want of efficient drainage in the public thoroughfares; accumulations of manure, refuse, and stagnant drainage in private yards; the defective construction and filthy condition of privy cesspits; and the deficient accommodation, as

regards sleeping space and ventilation, afforded in the common lodging-houses. In all these respects it was manifest, from our inspector's report, that there was room for much improvement, but we regret to say that the neglect of the Local Board of Health to furnish us with any report of their proceedings for the year 1865, leaves us ignorant how far our representations have met with attention, or to what extent, if any, sanitary improvements have been effected.

In Hamilton occurred two of the cases of typhus fever mentioned in another portion of this Report as having been brought to the town by one of the immigrants by the *Golden Empire* early in the year, and communicated by the immigrant to her sister, who nursed her during her illness. Immediately on the appearance of the disease being reported to us, we placed ourselves in communication with the Local Board of Health, directing what precautions should be taken against the spread of the disease; and in this instance we must give the Local Board of Health credit for their promptitude in reporting the case to us on its appearance, and in at once taking precautions against the spread of the disease, which, we are happy to state, did not extend beyond the two cases mentioned.

"*Golden Empire.*" Introduction of Typhus Fever.

An occurrence took place in the early part of the year 1865, which, though it did not materially affect the health of the colony, yet caused such wide-spread alarm as to make it desirable that we make some observations on the facts of the case, with the view of preventing, as far as possible, the creation of such unfounded alarm in future.

The occurrence to which we refer is the introduction into the colony of a number of cases of typhus fever by the ship *Golden Empire*, which arrived at Port Phillip Heads on the 2nd January, after a passage of eighty-four days from Liverpool, with 357 passengers, principally assisted immigrants, on board. The vessel was placed in quarantine immediately on arrival at the Heads, and the Acting Health Officer there reported—"The hospital room is confined and inadequate, the ventilation generally bad, the compartments crowded, dirty, and damp."

When the ship left Liverpool typhus fever was prevalent there, and though it does not appear that any of the passengers were exposed to the disease, or contracted it, before the vessel sailed, they were principally composed of the class of persons among whom typhus fever generally prevails; and the fact of the disease not breaking out in the ship till sixty-two days had elapsed since her leaving Liverpool, would tend to show that it did not arise from contagion. The first case of fever appeared on the 12th December, 1864, when the ship had passed through the tropics, and was then in very cold weather in a high south latitude. The coldness of the weather seems to have had a very considerable influence in producing the fever, by causing the passengers to keep constantly huddled together in their berths, which they could not be induced to keep clean; and the air between decks became consequently more and more contaminated, and the berths more and more filthy, till at length typhus fever, the usual result of these conditions, made its appearance. The first case of the disease was soon followed by others, till, on the 2nd January, 1865—the day the vessel arrived here—twenty-five cases, one of them fatal, had occurred, the date of the last case being the 28th December.

The vessel was, as we have stated, immediately placed in quarantine, and the sick landed at the Sanitary Station, and as soon as possible afterwards the whole of the passengers were landed, with their clothes and bedding, and the ship was cleansed and purified. On the 10th January, the Resident Surgeon of the Sanitary Station reported:—"The ship is thoroughly cleansed and fumigated. All the clothes and bedding have been passed through boiling water or the disinfecting house." The passengers were then re-embarked, and on the 12th January—ten days after her arrival, and fifteen days after the occurrence of the last case of fever on board—the ship was released from quarantine, as, the usual period (nine to eleven days) of the incubation of typhus fever having elapsed, the disease was supposed to be extinct.

The vessel arrived in Hobson's Bay on the evening of the 12th January, and during the two succeeding days the passengers were landed in Melbourne. On the 14th one of them was taken to the Melbourne Hospital, ill with typhus fever, and died there an hour after admission; and during the next five days, seven more cases—eight in all—were admitted to the hospital. Of these eight cases, five were placed in separate wards, where four of them died; the other three were distributed amongst the ordinary patients in the various wards of the hospital, and all three recovered. No other person in or belonging to the hospital was affected by the disease.

Fresh cases of typhus fever continued to occur, however, outside the Hospital, amongst the passengers by the ship. Thirteen were admitted to the Immigration Hospital in Melbourne between the 19th January and the 23rd February, when the disease became extinct in Melbourne, and all of these thirteen recovered; five cases occurred at Geelong, and five others in different towns of the colony; of these latter, two occurred at Hamilton, and one of these two was the only case in which the disease was communicated to any person who came in contact with the fever cases of the *Golden Empire.* The first of the two cases just mentioned was a passenger by that vessel, who arrived at Hamilton about the 16th January; she was laid up with an attack of typhus fever about the 27th of that month, and during her illness was attended by her sister, who slept at the foot of the same bed for two nights during the patient's illness; and this sister, who was an old resident in the colony, was taken ill on the 24th February with typhus fever, evidently contracted by sleeping in the same room with her sister; both the women recovered, however, and the disease did not extend any further.

These are the whole of the facts in connection with the cases of typhus fever brought into the colony by the ship *Golden Empire.* A great deal of unnecessary alarm was created, and representations were made that the ship had been released from quarantine too soon; in consequence, the Government appointed a commission to enquire into the quarantine of the *Golden Empire,* and generally into the working of the Sanitary Station; and the report of this commission, which was sent to the Chief Secretary on the 29th March, and ordered by the Legislative Assembly to be printed on the 18th July, 1865, condemned the Resident Surgeon of the Sanitary Station for allowing the passengers of the *Golden Empire* to leave quarantine without proper examination.

With regard to the danger to which the colony is exposed from the importation of typhus fever by passenger ships, there is just sufficient ground to enable persons ignorant of the topographical range of the disease to create a considerable amount of alarm, while there is, in fact, no reason whatever for concluding that typhus fever is ever likely to become epidemic, or to spread to any extent by contagion, in this colony. The disease is, no doubt, contagious, and, under the influence of close crowding, impure air, and filth, *in cold climates* it has spread extensively; *but it is essentially a disease of cold climates,* and it has never been known to spread to any extent in any part of the world having the temperature of this colony. Typhus fever has never but once (at the siege of Granada, in 1489) been known in Europe, south of 40° north latitude, whilst all the northern parts of Europe have suffered constantly and severely from its attacks; the terrible outbreak of typhus in Russia during the early part of 1865, with its frightful attendant mortality, being a recent instance of its severity in high latitudes.

But with reference to this colony, there is, in the experience of the last fourteen years, abundant proof that typhus fever cannot spread to any extent by contagion, or exist for any lengthened period in this climate. In the end of 1852 the *Ticonderoga,* immigrant ship, arrived here with typhus and scarlet-fever raging on board, ninety-eight deaths from those diseases having occurred during the voyage from Liverpool. She was placed in quarantine at the Heads, and remained there a little more than six weeks, during which time the captain of the vessel was the only person on board who escaped the disease,

and seventy-two additional deaths took place. The ship was released from quarantine on the 20th December, but the disease broke out again among the passengers in the steamer, whilst coming up the bay, and one child died on board; thirteen others were attacked with typhus, and were placed in the Immigration Hospital, where they all recovered. Typhus fever in this ship was probably more virulent and intense than it has ever been in any part of the world, every soul on board—with one exception, as before stated—being attacked, and the mortality being enormous. The isolation of the passengers at the Sanitary Station was merely nominal, constant communication being kept up between them and the residents at the Heads, as far as Cape Schanck. Dr. Taylor, then the Surgeon of the Sanitary Station, indeed, has stated that he found it impossible to prevent intercourse between the females of the *Ticonderoga* and the limeburners at the Heads; the immigrants were actually hired in considerable numbers by the farmers and limeburners in the neighborhood; and one single female formed an intimacy and absconded from the Sanitary Station with one of the limeburners; yet, nothwithstanding this almost unlimited intercourse, the disease did not spread beyond the passengers and crew of the ship, not a single person at the Heads taking the fever, nor did the thirteen immigrants treated in the Immigration Hospital in Melbourne communicate the disease to anyone else. The *Priscilla*, immigrant ship, with typhus fever on board, was placed in quarantine a month after the *Ticonderoga*, and the surgeon of the ship complained that the immigrants were hired by farmers at the Heads, fifteen miles away from the Sanitary Station, but in no instance was the disease communicated. The *Bombay* was placed in quarantine with typhus fever on board on the 14th December, in the same year, and was released on the 20th; and on her passage up the bay the disease broke out again, the fresh cases being treated in the Immigration Depôt here, without typhus fever being communicated to anyone. The ship *Allison*, after a short detention in quarantine for typhus fever, arrived in Hobson's Bay on the 20th December, 1852, and free communication took place between her passengers and their friends on shore; two days afterwards typhus fever was discovered on board, and two deaths took place from it; the vessel was ordered back to quarantine in consequence, but neither in this case was the fever communicated to any one. In 1857, four vessels; in 1858, three; in 1860, one; in 1862, one; and in 1863 one vessel, arrived here with typhus fever on board, and were placed in quarantine. In 1857, twenty-three cases of typhus fever; in 1861, three cases; in 1862, three cases; and in 1863, five cases, were successively treated without isolation in the Immigration Hospital, Melbourne, all occurring amongst immigrants after their landing in the colony, without the disease being communicated to any other of the inhabitants; and besides these, a great number of cases occurred among immigrants after they were scattered in various parts of the colony.

During all these fourteen years four persons caught the disease from nursing the sick—two at the Sanitary Station, one at Geelong, and one at Hamilton; but the fever never spread beyond these four cases, and has never established itself as an endemic or epidemic disease in this colony. This experience we therefore take to be ample to show, that the geographical position and climate of this colony are not such as to encourage the spread of typhus fever, and that the inhabitants of the colony have nothing to dread from the occurrence of cases of this disease among immigrants newly arrived.

Cholera in India.

Towards the close of the year, the existence of cholera in India, and in many parts of the Mediterranean with which this colony is in communication, rendered it not improbable that this much dreaded disease might find its way to these shores at any moment. Accordingly, we lost no time in pointing out to the various Local Boards of Health that the towns of the colony generally abound in those local causes which are known to favor the spread of cholera, and in urging on them the necessity for promptly taking active measures for their suppression or abatement. We pointed out that amongst the principal

of those local predisposing causes of cholera were :—1st, the defective construction, and frequently neglected condition, of privy cesspits, resulting in the contamination of the water and soil by percolation, and the atmosphere by evaporation ; 2nd, the emanations resulting from the decomposition of animal refuse, an evil painfully conspicuous at most of the slaughtering places and butchers' premises in the colony ; 3rd, defective drainage, and collections of impure water in stagnant open pools or under houses ; and, 4th, overcrowding and defective ventilation in dwelling-houses and buildings where numbers of persons are congregated. We endeavored to make it clearly understood that all these evils, defects, and nuisances, were *known* to be local predisposing causes of cholera, and that where they were suffered to exist cholera would most assuredly make its appearance, should that disease be unfortunately brought into the colony ; while we did not fail to point out that they were all of them removable, and that with the Local Boards, as the local guardians of the health of their towns, rested the responsibility of enforcing their removal or prevention. We also specially drew the attention of the Local Boards of Melbourne and Geelong, and the more important of the metropolitan suburbs, to the pressing necessity for using every means in their power for the discovery and suppression of those nuisances and sanitary evils which are known to foster the intensity of infectious disease, and to favor its spread ; and feeling that most valuable aid might be afforded by the police in discovering and reporting on existing nuisances, we placed ourselves in communication with the Chief Commissioner of Police, who at once courteously acceded to our request that the police in the city, and the several places we have indicated, should be instructed to note during their rounds of duty any nuisances or matters affecting the public health which might come under their observation, and report their existence at once to the Local Board of Health.

There is no doubt that our representations, and the imminence of the threatened danger, had the effect of temporarily inducing a considerably increased degree of attention to matters of sanitary requirement in many of the towns of the colony, and that for a time the laws relating to the suppression of nuisances and sources of injury to the public health were enforced somewhat more rigidly in many of the towns ; but there is also, unfortunately, too much reason to fear that but little permanent good was effected ; that the passing away for the time of the threatened danger was followed too generally by a return to the old laxity in the enforcement of those sanitary laws and regulations which are intended for the preservation of the public health at all times ; and that at the present moment the towns of the colony generally are but little better prepared to meet such a visitation as that which then threatened us than they were at the time to which we refer.

That such is the case is, we fear, in a great measure attributable to that indifference to sanitary considerations on the part of the local authorities and the public generally of which we have so often had to complain, and which would appear to warrant the conclusion that the actual presence or the threatened invasion of some serious epidemic is necessary in order to obtain for even the most obvious sanitary principles any practical and effective recognition. There is no doubt, however, that to the difficulties encountered by the Local Boards of Health in dealing with sanitary offences under the present defective Health Statute, is to be largely attributed the present objectionable condition of many of the towns of the colony, and that laxity and indifference on the part of the Local Boards which have led to it.

As regards the possibility of preventing by measures of quarantine the communication of cholera to the inhabitants of this colony, should, unhappily, the disease be brought hither by any vessel coming to these shores, we might not, perhaps, by such measures be able to prevent its communication to the colonists ; but we do not think the people of the colony would be satisfied, nor do we think they ought to be satisfied, if the most stringent measures of quarantine were not put in force, and every means tried to prevent the introduction of this disease amongst us. Our opinion is, that proper quarantine

measures, properly enforced in a suitable locality, at a sufficiently remote distance from population, would serve to extinguish the disease on the spot, should any vessel bring it hither.

The case of the *Ocean Monarch*, immigrant ship, which arrived at Port Phillip Heads in June, 1856, will serve to illustrate our meaning. This vessel, on her voyage hither from Plymouth, put into Rio Janeiro, and while in that port, cholera, which had been prevalent there for some time, broke out on board the vessel. Five days afterwards (on the 11th April) she sailed for this port. After leaving Rio Janeiro, twenty-three cases of cholera occurred on board, sixteen of which were fatal; the last case sickened on the 18th May, and the ship arrived at Port Phillip Heads on the 3rd June, when she was placed in quarantine, but the disease did not reappear. From this, it seems very clear that the fifteen days which elapsed between the 18th May and the 3rd June were sufficient to clear the ship from this dangerous disease, and prevent its introduction here; and there would appear to be, therefore, good reason to conclude, that if a vessel bringing cholera to these shores *be thoroughly isolated, at a sufficient distance from population, and in a proper locality,* the disease can be extinguished.

Whether the Quarantine Station at Point Nepean is sufficiently remote from population to serve this purpose, remains to be proved; but as there was some reason to fear that it is not sufficiently isolated, or removed from population, it was suggested by the President of this Board to the Government of this colony that they should unite with that of Tasmania in forming a small quarantine station for cholera on King's Island, which belongs to the latter colony. We regret, however, to have to state that the Tasmanian Government did not see fit to accede to the proposition made to them by the Government of this colony on the subject, as the formation of a small quarantine establishment on King's Island would not have involved any serious expenditure, and would, in our opinion, have afforded both colonies a means of probably perfect protection against the introduction to either of this fearful scourge.

Measures, however, are in progress for supplying the Quarantine Station at Point Nepean with such additional sanitary appliances as the recent researches and experience of the home authorities have shown to be necessary for properly dealing with this disease and procuring its extinction; and we may venture to hope, with some degree of confidence, that should this dire epidemic be brought to our shores, we may be able to prevent its spread beyond the limits of our Quarantine Station. We can, however, only venture to *hope* we have attained this much; and with the Local Boards of Health in the various towns of the colony still rests the grave responsibility of freeing their towns from those removable nuisances and sources of offence or injury to the public health which, as we have pointed out to them, are known to be local predisposing causes of this disease.

Sections 13 and 14 applied to Pentridge.

Occasion arose, in the beginning of September, for taking action under the 13th and 14th clauses of the "Public Health Statute 1865," which authorises the making of such regulations as shall seem fit, "for the prevention, as far as possible, or mitigation of epidemic, endemic, or contagious disease," under the sanction of a special order by the Governor in Council.

The Resident Surgeon of the Pentridge Stockade reported to us, on the 8th September, that an outbreak of malignant scarlet-fever had occurred in the immediate neighborhood of the Stockade, attended with unusual and serious mortality, the deaths from the disease up to the date of his report being four out of the eight persons attacked in the immediate locality where the disease first appeared, while a fifth case was also hourly expected to terminate fatally, and the disease was spreading on all sides. Immediately on the receipt of Dr. Reed's report, the President of this Board visited the place, when it was found that, while the disease was more or less prevalent throughout the district, the eight most serious cases, and all the deaths, had occurred in the immediate neighborhood

of a butcher's premises, which were situated close to the main road, and closely surrounded by dwellings. On inspection, the premises in question were found to be in a very filthy and offensive condition, principally from very defective drainage, and the consequent lodging about of blood and refuse matter on the ground adjoining, where it remained to be absorbed or evaporated, to the pollution of the surrounding atmosphere. As the district of Pentridge was not under the jurisdiction of any Local Board of Health, we at once took the necessary measures to obtain an Order from the Governor in Council, enabling us to deal with the existing offence under the clauses of the Act to which we have referred, and on obtaining such Order we lost no time in enforcing the removal of the nuisance, and the placing of the premises where the offence was occasioned in a proper sanitary condition.

There is no doubt that much of the nuisance which arose in this instance might have been prevented, had the drains from the premises where the offence was created been kept in proper condition and cleanliness, and the "Police Offences Statute" gives power to enforce the cleanliness of all such drains and premises in those districts to which certain of its provisions have been extended. There appeared, however, to be some doubt as to whether the precise locality where this outbreak of disease took place was within any district to which those provisions of the Police Act had been extended, and accordingly no action had been taken under them to remove or prevent the occurrence of the nuisance now under notice. By an Order in Council, however, of the 30th October, 1865, sections 5 to 10 of this Act were extended definitely to the township of Pentridge, and any doubt on this point set at rest.

Privy cesspits and earth-closets.

The reports of our superintending inspector show, that what we consider, without doubt, the most serious sanitary evil in the colony, still obtains, in nearly every town, with almost undiminished intensity, notwithstanding our earnest and repeated efforts to effect some improvement. We allude to that faulty construction of privy cesspits which permits the percolation of the contents of those receptacles into the adjacent ground, and the consequent saturation of the soil with offensive matter injurious in the highest degree to the health of any populous town.

It is now long since we first drew the attention of Local Boards of Health to the very great importance of this subject. We pointed out to them, as forcibly as we could, the serious evils of necessity arising from a defective construction of privy cesspits, and the grave responsibility which rested on them if they suffered the continuance of such a serious and constantly operating cause of injury to the public health. At the same time we placed in the hands of the Local Boards a plan of a cheap and effective mode of constructing those receptacles, whereby the percolation of their contents might be entirely prevented, and the evils almost inseparable from the privy cesspit system in any shape thus reduced to a minimum. The plan we recommended (which is given in our Report for the year 1862) was of the most simple description, and involved such a trifling outlay as placed it within the reach of every householder; and we were also at considerable pains to show the Local Boards of Health how, by the adoption of a suggested bye-law, they could enforce some such construction as we recommended.

Notwithstanding all this, however, the number of cases in which any improved construction of privy cesspits has been attempted, is lamentably small, and the old objectionable plan still prevails in almost every instance. In most places, in the country towns more especially, cesspits are formed by merely digging a hole in the ground, without any attempt whatever to render the sides or bottom impervious to water, and thereby prevent the escape of the liquid portion of their contents by percolation into the adjoining ground. Occasionally a cask is placed in the hole thus formed, but this device, while it may for a time prevent percolation, soon ceases to be of any service in this respect, unless, which is rarely the case, puddling around the outside of the cask is

resorted to. This defective construction of privy cesspits, even when they are periodically emptied, displays either a most deplorable ignorance, or a very reprehensible disregard of the injury resulting to the public health of any town from the saturation of the soil with matter so noxious as the contents of those receptacles; but the evil, serious as it is even where periodical cleansing is resorted to, is, in some towns, alarmingly increased by the practice, which, it will hardly be credited, is suffered by the local authorities, of covering over those holes when full, and opening others alongside, to be filled and replaced by others in their turn. No more effectual plan for the complete saturation of the soil of a town with offensive matter could well be devised were this the object sought to be attained, and that it has been suffered in any town possessing a Local Board of Health may well be a matter of surprise. The fact that such a proceeding is in any case tolerated by a Local Board of Health entrusted with the conservation of the health of their town, will afford one illustration of the many difficulties we have to contend with in obtaining recognition for even the most obvious principles of sanitary economy, and will show how hopeless it is, with only the limited powers afforded by the existing law, to expect to be able to enforce attention to minor sanitary requirements where the existence of such a serious sanitary evil is tolerated by the local authorities.

Privy accommodation at Common Schools

The defective construction and arrangement of the privy accommodation at some of the public schools in the colony having previously attracted our attention, we considered it desirable to make this matter a subject of special enquiry in the inspections made under our direction during the year, in order that we might ascertain to what extent this evil obtained, and accordingly the reports of our superintending inspector give a detailed description of the privy accommodation at the Common Schools in the several towns visited by him during the year. We were sorry to find from these reports that that neglect of sanitary requirements in this respect which in some cases had come under our notice, obtained generally in the Common Schools of the towns inspected. Not only was that defective construction of the cesspits of which we have already spoken, of common occurrence, but in most cases a disregard of cleanliness was painfully conspicuous, some of the cesspits being found full to overflowing, and the condition of the privies generally being very far from creditable. Besides this, the requirements of the Public Health Statute, as regards the provision of adequate accommodation, were found to be almost universally neglected, and not only was the privy accommodation, in nearly every instance, insufficient in extent for the numbers attending the school, but the requirements of decency, in regard to the separation of the sexes, were very frequently overlooked, in some cases, indeed, to a very shameful extent.

Believing that such institutions as the Common Schools of the colony should be amongst the first to set an example of attention to sanitary requirements, we were surprised to find so generally in those establishments that disregard of them in this respect which the reports of our inspector disclose. We, therefore, deemed it desirable to make a special representation to the Local Boards of Health on this subject, and accordingly we addressed to them a circular, reminding them that it is their duty to enforce the provisions of the 25th section of the Public Health Statute, which directs that sufficient privy accommodation, separate for each sex, be provided at all places where numbers of persons are congregated. We also wrote to the Board of Education, enclosing a list of the Common Schools visited by our inspector during the year, in which were shown the many instances where the privy accommodation at those places was insufficient, and the requirements of cleanliness and decency neglected, and urging that body to use their influence in aiding the Local Boards of Health to effect some improvement. We have since ascertained that in some towns action has been taken by the Local Boards in this direction, and we are induced to hope that our next inspection of the towns of the colony will show that our representations to the Local Boards have had some effect in obtaining attention to this important matter.

Earth-closets.

In our last Report we stated that a manufactory of earth-closets had been established, and was in operation at Richmond, for the purpose of rendering available in every house the use of dry, powdered earth as a deodorizer of night-soil. Since then, other similar manufactories have been established, where earth-closets of varied construction are made, the principle being the same in all, namely, the immediate application of the earth each time the closet is used, the variations in construction consisting in the different modes by which the earth is deposited in the closet-pan. Already several houses and some large offices and establishments in the city are supplied with these closets, but in order to render their adoption general legislative interference is obviously required, for manifest as are the many advantages of the system in comparison with that of privy cesspits, the indifference on the subject which is evinced by the public generally shows that the extension of this important sanitary reform will be but slow, unless by some legislative enactment power be given to local authorities to enforce it. Accordingly, in the Amended Public Health Bill, which was submitted to Parliament during the last Session, we made provision for conferring some such powers on the Local Boards of Health, and it was our hope that by this time we should have seen this great sanitary reform initiated, and in a fair way for speedy accomplishment. The loss of the Amended Public Health Bill, however, has for the present postponed this, though we earnestly hope that another Session of Parliament will not be allowed to pass without the enactment of some measure authorising Local Boards of Health to compel the substitution of earth-closets for privy cesspits in every town of the colony. We have not the slightest doubt that if the earth-closet system were once fairly established in any one town under the sanction of legislative enactment, its many advantages over the present cesspits would be so manifest that its adoption in every town in the colony would speedily follow, for we are convinced that there are no difficulties in the way that may not readily be overcome, after a little experience shall have indicated those trifling defects of detail which have to be encountered in the initiation of any new project.

Before proposing that Local Boards of Health should be empowered by law to compel the substitution of earth-closets for privy cesspits in any town, we made enquiry of the principal men engaged in the removal of night-soil from houses in the city as to the terms on which, if the earth-closet system were established in Melbourne, they would undertake the periodical supply of dry, powdered earth to each house in sufficient quantity, and the removal therefrom of the contents of the closets. Our enquiries elicited the fact, that one of the individuals most largely engaged in the business of removing night-soil from privy cesspits, was already contracting for the weekly removal of the contents of earth-closets, and the supply at the same time of dry earth, at several houses in the city and suburbs, and that his charge for this service, with but comparatively a few houses to contract for, is but thirty shillings per house per annum. This individual, in reply to our enquiries, stated his willingness, should the earth-closet be at all generally adopted, to contract for the performance of the required service at least once in each week, and as much oftener as might be necessary, for the sum of twenty shillings a year for each house; and the rate named by another extensive contractor for the removal of night-soil was twenty-six shillings per annum for the like service. So far, therefore, as regards the cost of emptying the earth-closets, and supplying dry, powdered earth for use therein, it will be seen that there is nothing to deter from the immediate adoption of this great sanitary reformation. Nor need the first cost of converting into earth-closets the existing privies be in any case more than trifling. The main portion of the work would consist in emptying, and then filling up with earth, the present cesspit, and boarding it over at the top; and this done, all that is actually required is the alteration of the present seat, so as to admit of the closet-pan being put underneath and removed from time to time, and the provision of a closet-pan or bucket, and a box or other receptacle for the dry earth, with a scoop for its application. In the better class of tenements, or wherever thought desirable,

there might be adopted one of the various descriptions of self-acting earth-closets which are now manufactured, and in which the required quantity of earth is precipitated into the closet-pan by the action of the seat, or lid, or other machinery each time the closet is used; but no elaborate machinery is at all essential to the proper working of an earth-closet, the very simple appliances we have mentioned being all that are really necessary.

We have alluded above to the *weekly* removal of the contents of the earth-closets, and possibly to some who are not aware that the immediate application of dry earth to night-soil has the effect of at once preventing all offensive smell, and who think only of the nuisance periodically created by the visits of the night-man under the present system, this frequent cleansing of these receptacles may seem alarming. It may be as well, therefore, to state here, that where the dry, powdered earth is regularly and immediately deposited in the closet-pan, in sufficient quantity to perfectly cover the excreta each time the closet is used, not only is the escape of any unpleasant smell at once prevented, but the contents of the pan or bucket are very soon rendered innoxious, and can be removed at any time in a few minutes without giving rise to any offence.

In our last Report we stated that, in order to bring the earth-closet into general use, the provision of an open shed in each yard was necessary, in order to preserve the dry earth from rain before its use in the closet, and to dry the compound afterwards so as to fit it for use again and again in like manner as the original supply of earth in the first instance. Such a shed is no doubt an essential where the mixture of dry earth and night-soil is intended to be dried on the premises, with a view to its repeated use in the same manner, and the production thereby of a valuable manure; but in the great majority of houses this would neither be attempted nor desired; and we have since ascertained, as we have here shown, that arrangements can readily be made for the weekly removal of the contents of earth-closets from every house, and the supply of dry earth thereto, at a very reasonable rate; so that this aspect of the question does not now present any difficulty.

We have not here dwelt on the advantage which the earth-closet possesses over the privy cesspit, in the production, without offence, of a valuable manure from material which is not at present utilised to any extent, although we consider this by no means an unimportant feature of the system, and one the pecuniary benefits of which will before long become manifest. It is our wish now to point merely to the purely sanitary advantages which the earth-closet presents in providing us with a means of at once putting a stop to what there is no doubt is the greatest sanitary evil of the colony, namely, that saturation of the soil of our towns with night-soil, which, under the present defective privy cesspit system, is constantly going on, to the certain, though not always visible, injury of the public health.

The seriousness of this evil cannot well be exaggerated. It obtains, to a greater or less extent, in every town in the colony, even, as we have shown, in those where the water supply of the inhabitants is drawn from wells, and where it might be supposed efforts would be made to prevent the saturation of the soil through which that water percolates with matter so noxious and offensive as the emanations from privy cesspits. That the evil exercises a decidedly baneful effect on the health of any town where it exists there cannot be a doubt, and a very striking illustration of this in towns where the water supply is obtained from wells sunk on the spot, is to be found in a recent report of an officer of the Privy Council of Great Britain on the sanitary condition of the city of Chichester. In this city, which possesses almost unequalled sanitary advantages—wide open streets, healthful situation, great drainage facilities, ample house space unusually well provided with gardens, the absence of all offensive trades or occupations, in fact, almost every conceivable condition necessary for the maintenance of a high standard of public health—the mortality, nevertheless, was excessive, as high as that of the worst parts of London, and higher than that of nine of the Metropolitan unions; and this mortality arose from diseases —typhoid and other fevers—clearly pointing to the presence of some constantly operating

cause of injury to the public health, in the midst of all the unrivalled sanitary advantages we have mentioned. Investigation disclosed the fact that all these advantages were more than neutralised by the privy cesspit system in operation, whereby the soil of the city was saturated with the contents of those receptacles, and the water supply of the inhabitants, which was drawn from wells sunk in the yard of each house, consequently polluted to an extent that left no doubt as to the cause of the excessive mortality, or the general sickness and invaliding, which characterised what ought to have been one of the healthiest towns in the kingdom ; in fact, the mortality and sickness were distinctly traced in several instances to the consumption of the polluted well-water. In Chichester, the *sides* of the cesspits were lined with brick and mortar, but this did not prevent their contents from percolating through the ground beneath, or overflowing in wet weather, and thus saturating the adjoining ground : it may therefore be readily imagined to what extent the soil of a town is thus saturated where cesspits are formed, as is the common practice here, by digging mere holes in the ground, destitute of even the slight protection against percolation which we have mentioned.

There is no doubt that a proper construction of privy cesspits, such as we have for years been trying to get the Local Boards of Health to enforce, and their regular and systematic cleansing, would go a long way to mitigate the sanitary evils inseparable from the privy cesspit system in any shape ; but our efforts to effect an improvement in the construction of those receptacles have not met with such success as to lead us to hope for any permanent or appreciable amendment so long as privy cesspits are tolerated at all. We have shown, we conceive, that there exists no serious difficulty in the way of enforcing the general adoption of the earth-closet in every town of the colony, and we now venture to hope that before long we shall see placed on the Statute-book of the colony an enactment authorising the accomplishment of this most important sanitary reform.

An objection has been raised to the use of the earth-closets in public hospitals, on the ground that the greater fluidity of the stools of the patients rendered their use impracticable in those institutions. This objection, however, will appear more imaginary than real, when it is stated that night-soil generally contains, on the average, about 95 per cent. of water, and that consequently the increase of fluid in the stools of hospital patients could not cause an increase of more than 5 per cent., which is, for all practicable purposes, inappreciable, and would require only a little more earth to absorb the additional moisture. Moreover, there is no doubt whatever that the managers of any hospital could readily contract with the farmers in the neighborhood to supply any quantity of earth for use in the closets, and take away the resulting compound as often as might be required.

Vaccination.

In our Report for the year 1863 we mentioned that we had every reason to expect the most valuable results in the promotion of vaccination from the revival of a plan, formerly followed, but latterly allowed to fall into disuse, whereby the police authorities in each district were furnished with periodical returns by the deputy registrars, showing the number of cases where the provisions of the Act, as regarded vaccination, had not been complied with. We are glad now to be able to report that the revival of this plan, which has since then been steadily in operation, has been of very marked advantage in the general promotion of vaccination, by systematically bringing under notice those cases in which vaccination happens to be neglected. The police being placed in possession of the names of those persons who have registered their children's births, but who have not registered their vaccination within the period the law allows, are instructed to make enquiry as to the cause of this neglect in each instance ; and while they are cautioned that they are not to make the Vaccination Act a means of oppression in any case, they are directed to warn all those concerned of the penalties the Act prescribes for neglect of its requirements, and where this neglect is wilful to take the necessary steps to procure compliance with the law.

As the law imposes a penalty for neglect of vaccination, it would appear that nothing more is needed to secure the vaccination of nearly every child in the colony than the provision of adequate vaccination facilities in every district. Formerly such facilities were afforded to the greatest extent practicable by the appointment as public vaccinators, in districts where no qualified medical man resided, of persons who, though not qualified medical practitioners, were ascertained to be competent to properly perform the operation of vaccination. Recently, however, on the ground that the Vaccination Act contemplates only the appointment of duly-qualified medical men as public vaccinators, the Government declined to appoint any but medical men to that office, even in districts where no medical man is to be had, and considerable difficulty was thus for a time experienced in extending the operations of the Act to many of those outlying districts of the colony which are many miles distant from a medical man. We are, nevertheless, of opinion that the Vaccination Act does admit of the appointment of other than duly-qualified medical men as public vaccinators, and that, in fact, as the Act prescribes a penalty for non-vaccination, and directs the appointment of such medical officers and practitioners and "such other officers as may be necessary" for carrying out its provisions, the appointment of such persons in places where a medical man is not to be had is expressly contemplated, and was, as we have reason to know is the fact, intended to be provided for in that enactment by its framers. The difficulty to which we have alluded has, however, been since obviated by the Government placing on the Estimates a sum of money to meet the expense of having those outlying districts which are unprovided with a medical man periodically visited by the nearest public vaccinator, for the purpose of affording the inhabitants the necessary facilities for complying with the requirements of the law.

In our Report for 1863 we also remarked, with regard to the subject of vaccination, that efforts had been made to secure, to as large an extent as possible, the benefits known to result from re-vaccination, in the additional protection from the attacks of small-pox which the practice affords. As re-vaccination is not, however, like primary vaccination, compulsory, and can only, therefore, be *recommended* by those to whom the administration of the vaccination is intrusted, we are not in a position to know to what extent the practice has actually been adopted. The importance of re-vaccination has, however, been forcibly urged on the attention of the various public vaccinators throughout the colony, who have it as part of their general instructions to promote the practice by every means in their power.

Recent experiments made in England tend to prove that, in order to render effective the protection which vaccination affords against the attacks of small-pox, it is necessary that the system should be saturated with the effects of vaccination, and that this saturation is not effected by a single vaccination performed by means of one puncture. Moreover, some experiments made, under the direction of the Chief Medical Officer, by the public vaccinator for Melbourne, elicited the important facts—that children successfully vaccinated on one day were found to be susceptible of successful vaccination a week afterwards, and that in two instances vaccination even a third time, after the lapse of a second week, was also successful. In order, therefore, to secure to the public the largest attainable amount of immunity from small-pox which can be afforded by vaccination properly and effectively performed, instructions were issued, in June, 1865, to all public vaccinators in the colony, directing them to perform the operation of vaccination in future by making four distinct punctures in every case, and requesting them, whenever they should be able to secure the attendance of the children for the purpose, to re-vaccinate the successful cases each successive week so long as re-vaccination should prove successful.

With respect to vaccination by four separate punctures, some difficulty was at the outset experienced, owing to the objection of the mothers of the children in many cases to allow the operation to be thus performed; but wherever this difficulty was reported by the public vaccinators, they were instructed to inform the parents that vaccination by less

than four distinct punctures was not a "successful" vaccination, and that therefore, for any vaccination performed by making less than that number of punctures, the certificate of successful vaccination required under the Act would not be given. At the same time, public vaccinators were required to forward, with their periodical accounts for their vaccination fees, a declaration that all such vaccinations were performed in the manner prescribed.

So far, therefore, as regards vaccination by the public vaccinators of the colony, it will be seen that measures have been taken to ensure, as far as is practicable, that vaccination shall be effectively performed. With regard, however, to the large number of cases which are vaccinated by private practitioners, there are not, of course, the same means of securing that thorough vaccination which, as we have stated, has been proved to be necessary to give *effective* protection against small-pox. On the contrary, there is reason to believe that, from the frequent unwillingness of mothers to allow their children to be vaccinated with more than one puncture, vaccination with one, or at most two punctures, is the rule with a large number of private practitioners, and that, consequently, many children in the colony are left without that full measure of protection against small-pox which is only to be attained by thorough and efficient vaccination.

Local Boards' Reports.

We regret to have to report that we still experience very great difficulty in obtaining from the Local Boards of Health those periodical reports on the sanitary condition and progress of their districts which they are required to make under the 10th section of the Public Health Statute.

The Act directs that these reports should be furnished to us "at least once in every three months," but does not provide any means for enforcing compliance with the direction. We have endeavored, at very considerable pains, to facilitate the preparation of the required reports by the Local Boards of Health, by placing them in possession of clear and precise instructions as to the nature of the reports required from them, giving them the headings of the different subjects on which they should furnish information; but, notwithstanding this, and also that we have required the Local Boards to report to us only twice in each year instead of four times, we have in many cases to make repeated applications before we can obtain their reports, which, when received, are often found to be drawn up in almost total neglect of our instructions, while in some cases our applications have altogether failed to obtain for us any reports whatever. For instance, up to the present time we have not received any reports of the proceedings of the Local Boards of Health of Ballarat, Browns and Scarsdale, Brunswick, Essendon and Flemington, Gisborne, Hamilton, Raywood, Richmond, or St. Kilda, for the year 1865, although in each of those cases we have made repeated applications for the required information, and pointed out to the Local Boards the inconvenience to which we were subjected by their neglect. We are consequently, as regards some of the towns in the colony, left altogether without authentic information as to their vital statistics or sanitary condition and progress, while, in respect to others, we have to make repeated applications for this important information, to be in the end supplied with meagre and imperfect particulars.

The importance to the Central Board of Health of being regularly placed in possession of precise and authoritative information in regard to the sanitary condition and progress of every district under the operation of the Public Health Statute is, of course, manifest, and the difficulty we experience in obtaining this information under the present Statute affords another illustration of its many defects, and of the impediments we encounter in its administration. We consider there exists a proved necessity for amending the present law in this particular, and we have accordingly proposed an alteration to that effect in the amended Bill, to which we have already alluded. We do not consider, however, that *quarterly* reports, as required by the present Statute, are really needed, as all necessary purposes would be served if the Local Boards of Health were to furnish,

immediately after the close of each year, a full report, in a prescribed form, of their proceedings and the sanitary condition and progress of their respective towns, during the year just ended.

Uselessness of merely nominal fines.

Defective as the present Public Health Statute is in many important respects, and limited as are the powers it places in the hands of those intrusted with the guardianship of the public health, the difficulties encountered by the Local Boards in endeavoring to enforce compliance with its provisions, are, we regret to say, frequently much enhanced by the apathy of the magistrates before whom complaints under the Act are brought. It is too often the case that offences against the laws made for the preservation of the public health are looked on with indifference; but this indifference is doubly to be regretted when shown by those to whom the administration of the law is intrusted, and whose duty it is to punish those offending against it. During the year embraced in our present Report, several cases occurred where, notwithstanding that the nuisance complained of was of a really flagrant description, the offender was suffered to escape with the infliction of a merely nominal fine—in some cases only a shilling! It must be manifest that such leniency on the part of the Bench amounts to an actual encouragement to the offender to persist in his violation of the law, more especially where that violation is, as in many instances, attended with pecuniary benefit to himself, either in the actual making of profit from an offensive business, or in the saving of expense by the non-removal of a nuisance; and that while the Local Boards of Health, by this indifference of the local Benches to sanitary offences, are thwarted in their efforts to enforce observance of the law, it is hopeless to expect from them that zeal and activity in the discharge of their functions as local guardians of the public health for which we might otherwise look. On the contrary, and as might be expected, this difficulty in obtaining the infliction of adequate punishment, or in some cases in obtaining a conviction at all, for breaches of sanitary regulations, induces a like apathy on the part of the Local Boards, and leads, as a necessary result, to the creation and toleration of nuisances and causes of offence or injury to the public health which a vigorous administration of the law would have checked at the outset.

There are inherent difficulties enough in the way of enforcing compliance with sanitary laws and regulations under even the most perfect enactment that can be framed, without those difficulties being increased by any laxity in the enforcement of the law; and much benefit as we expect to result to the public health from the passing of the amended measure to which we have before alluded, and which we hope shortly to see become law, there is no disguising the fact, that, if those who have to adjudicate on complaints made under its provisions render those provisions practically inoperative by the infliction of merely nominal fines, the amount of good to be derived from the measure will be very seriously diminished.

Fines for repetition of offences.

Having spoken of the difficulties which are in some cases thrown in the way of the Local Boards of Health by the leniency of the magistrates before whom their complaints under the Act are brought, we desire, in conclusion, to point to another manner in which the provisions of the Act are rendered practically of little use, and this by the Local Boards themselves. In accordance with our instructions, the Local Boards generally have provided their inspectors of nuisances with forms of "notices" with which to serve persons on whose premises nuisances are found to exist, or by whom nuisances are occasioned, and such notices specify a certain period within which the nuisance complained of is to be removed or abated. In most cases these notices are complied with within the stated period, and so far, the removal or abatement of the nuisance having been accomplished, enough would at first sight appear to have been done. But in numerous instances it is found that as the inspector does not serve his "notice" until the nuisance to which it refers has become sufficiently serious to come prominently under observation, the offender has only to remove,

within the given time, the nuisance complained of, and thus escape any punishment for having occasioned what must have been for some time a cause of offence, and possibly serious injury to the health of those in his neighborhood.

It is obvious, therefore, that if no punishment be inflicted for a repetition of offences of this nature, but the offender be allowed to escape each time on a mere compliance with the inspector's notice of removal, but little good, and none of a permanent nature, is accomplished. In fact, the offender is encouraged to disregard the nuisance he creates until it attains from time to time such a magnitude as to call for the inspector's intervention, when he has then, at most, to remove the offence complained of. The only proper way to deal with such cases as those to which we have alluded, is *to inflict a fine in every instance where a nuisance is a second time complained of, and to increase such fine for every repetition of the offence.* We have, from time to time, pointed out to the Local Boards of Health that this is the only really effectual method of dealing with such offences, and we are confident that the adoption of this course would speedily have the effect of diminishing the large class of removable nuisances to be found in every town from time to time, thereby contributing largely to the health and comfort of the community, and, we may add, considerably lessening the labors of the Local Boards themselves, and their officers.

W. McCREA, M.B., President.
RICHD. YOUL, M.D.
J. T. SMITH, M.P.
W. M. BELL.
W. W. WARDELL.

T. R. WILSON, Secretary.

APPENDICES.

APPENDIX A.

LIST OF LOCAL BOARDS OF HEALTH, 31st DECEMBER, 1865.

City of Melbourne.
Town of Geelong.

Boroughs:
Amherst.
Ararat.
Ballarat.
Ballarat East.
Beechworth.
Belfast.
Brighton.
Browns and Scarsdale.
Brunswick.
Buninyong.
Carisbrook.
Castlemaine.
Chewton.
Chiltern.
Clunes.
Craigie.
Creswick.
Collingwood East
Daylesford.
Dunolly.

Boroughs—continued.
Eaglehawk.
Echuca.
Emerald Hill.
Essendon and Flemington.
Fitz Roy.
Footscray.
Gisborne.
Hamilton.
Hawthorn.
Heathcote.
Hotham.
Inglewood.
Jamieson.
Kew.
Kilmore.
Malmsbury.
Maryborough.
Newtown and Chilwell.
Portland.
Prahran.
Queenscliff.
Raywood.
Richmond.

Boroughs—continued.
Rutherglen.
Sale.
St. Arnaud.
St. Kilda.
Sandhurst.
Sandridge.
Sebastopol.
Smythesdale.
South Barwon.
Taradale.
Tarnagulla.
Wangaratta.
Warrnambool.
Williamstown.
Woodend.
Wood's Point.

Shires:
Avoca.
Kyneton.
Maldon.
Stawell.
Yackandandah.

APPENDIX B.

TOWNS INSPECTED DURING THE YEAR 1865 UNDER THE DIRECTION OF THE CENTRAL BOARD OF HEALTH.

Amherst.
Ararat.
Avoca.
Ballarat.
Ballarat East.
Beechworth.
Belfast.
Browns and Scarsdale.
Buningyong.
Carisbrook.
Castlemaine.
Chewton.
Chiltern.
Clunes.
Craigie.
Creswick.
Daylesford.
Dunolly.
Eaglehawk.
Echuca.
Fitz Roy.
Geelong.
Gisborne.
Hamilton.
Heathcote.
Inglewood.
Kilmore.
Kyneton.
Maldon.
Malmsbury.
Maryborough.
Newtown and Chilwell.
Portland.
Prahran.
Raywood.
Rutherglen.
St. Arnaud.
Sandhurst.
Sebastopol.
Smythesdale.
South Barwon.
Taradale.
Tarnagulla.
Wangaratta.
Warrnambool.
Williamstown.
Woodend.

By Authority: John Ferres, Government Printer, Melbourne.

21. h. 17 (m).

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DEATHS.

RETURN to an Order of the Honourable The House of Commons, dated 24 July 1863;—*for*,

A RETURN (according to the subjoined Form) of the AVERAGE ANNUAL PROPORTION of DEATHS from specified Causes, at specified Ages, in *England* generally, and in each Registration Division and Registration District of *England*, during the Decennial Period 1851-60:—

Population at all Ages.		Division or District.		Deaths per 100,000 living of each Class referred to.																	
				At all Ages.					At less than 1 Year of Age.	At less than 5 Years of Age.							At Ages between 15 and 55.				At Ages between 35 and 55.	
				All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.	All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Hooping Cough.	Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain.	
1851.	1861.	No.	Name.														Male.	Female.	Male.	Female.	Male.	Female.

(*Mr. Lowe.*)

Ordered, by The House of Commons, *to be Printed.*
5 *February* 1864.

6 PP 156
TOMHB

RETURN of the AVERAGE ANNUAL PROPORTION of DEATHS from specified Causes, at specified Ages, the Decennial

Note.—The population, according to the Census of 1851 and 1861 is stated for the Districts as they were severally constituted at the end of 1851 and 1860.

In many Districts the mortality is increased by the circumstance of large public institutions being situated in them. A Tabular Statement of shows the Number of Inmates at the time of taking the Census of 1861, and also the Number of Deaths registered during the year 1861. The *District*); repetitions of these letters show the number of such institutions. (*See also the foot-notes here given.*)

This Return is based on the Deaths occurring during the Ten

POPULATION AT ALL AGES.		DIVISION OR DISTRICT.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
17,927,609	20,066,224	–	ENGLAND AND WALES - -	2,217	91	108	88	11
			DIVISIONS:					
2,362,236	2,803,989	I.	London - - - - - - -	2,363	85	152	94	8
1,628,416	1,847,661	II.	South Eastern Counties - -	1,955	89	87	62	15
1,234,332	1,295,497	III.	South Midland Counties - -	2,044	103	95	53	8
1,113,982	1,142,580	IV.	Eastern Counties - - -	2,058	97	86	58	14
1,802,261	1,835,714	V.	South Western Counties - -	2,001	84	51	69	10
2,136,573	2,436,568	VI.	West Midland Counties - -	2,237	89	112	82	12
1,215,501	1,288,928	VII.	North Midland Counties - -	2,111	87	83	83	21
2,488,438	2,935,540	VIII.	North Western Counties - -	2,550	99	160	129	6
1,789,047	2,015,541	IX.	Yorkshire - - - - -	2,309	86	117	102	13
969,126	1,151,372	X.	Northern Counties - - -	2,199	80	115	107	9
1,186,697	1,312,834	XI.	Monmouthshire and Wales - -	2,126	102	46	86	10
			DISTRICTS:					
			I. LONDON:					
			Middlesex (Part of).					
120,004	185,950	1	Kensington (*a*) - - H. H. H. H.	2,025	61	135	69	9
56,538	63,439	2	Chelsea (*b*) - - - - W.	2,478	73	169	99	5
73,230	87,771	3	St. George, Hanover Square (*c*) H.	2,085	69	111	65	11
65,609	68,213	4	Westminster (*d*) - - - H.	2,648	106	197	107	7
24,640	22,689	5	St. Martin-in-the-Fields (*e*) - H.	2,554	65	107	62	5
36,406	35,326	6	St. James, Westminster - - -	2,149	45	198	61	4
157,696	161,680	7	Marylebone (*f*) - - - H.	2,371	65	138	84	7
11,986	19,106	8	Hampstead - - - - -	1,600	62	72	80	9
166,956	198,788	9	Pancras (*g*) - - - H. H. W.	2,277	67	106	96	9
95,329	155,341	10	Islington (*h*) - - - - H. H.	2,075	126	103	104	12
58,429	83,295	11	Hackney (*i*) - - H. W. L.	1,963	81	98	79	9
54,214	54,076	12	St. Giles - - - - -	2,668	90	132	83	7

(*a*) In this district is situated the Lock Hospital (containing 106 patients on 8th April, 1861), in which the deaths of five persons were registered in 1861; St. Mary's Hospital (containing 147 patients), where 175 deaths were registered; Hospital for Consumption and Diseases of the Chest (containing 187 patients), where 131 deaths were registered; and also the Cancer Hospital (containing eight patients), where 19 deaths were registered in 1861.

(*b*) In this district is situated a Workhouse belonging to St. George's, Hanover Square (containing on 8th April 1861, 320 inmates), in which the deaths of 29 persons were registered in 1861.

(*c*) St. George's Hospital is situated in this district (containing on 8th April 1861, 312 patients), in which the deaths of 304 persons were registered in 1861.

(*d*) Westminster Hospital is situated in this district (containing on 8th April 1861, 144 patients), in which 151 deaths were registered in 1861.

(*e*) Charing Cross Hospital is situated in this district (containing 86 patients on 8th April 1861), in which 69 deaths were registered in 1861.

in *England* generally, and in each Registration Division and Registration District of *England*, during Period 1851–60.

1860. In calculating the mortality, corrections have been made for any important changes which occurred in the limits of the Districts, between

the institutions likely to disturb the rate of mortality is given in the Registrar General's 24th Annual Report (pp. 174–204). The Table there given presence of these institutions is here indicated by H. (for Hospital), L. (for Lunatic Asylum), and W. (for Workhouse *belonging to another*

Years 1851–60, amounting in the Aggregate to 4,210,715.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
17,731	6,760	526	1,040	1,337	103	419	280	362	370	403	119	84	153	122
17,194	7,802	708	1,480	1,247	130	488	389	656	455	332	159	102	195	137
14,352	5,080	388	802	927	56	258	161	275	377	398	100	65	162	133
17,364	5,738	441	880	810	62	230	184	286	321	398	85	62	164	123
17,616	5,613	389	823	709	47	230	135	311	344	447	83	61	121	113
14,507	5,253	223	846	741	95	318	203	278	332	358	106	66	141	113
18,385	7,052	609	1,249	1,175	123	394	336	283	319	367	119	80	161	120
18,366	6,207	414	814	1,617	69	394	238	277	308	437	84	68	120	109
21,471	8,786	889	1,323	1,866	113	644	404	457	413	471	165	130	167	134
19,682	7,401	571	972	2,048	116	488	315	328	355	430	118	86	144	122
16,906	6,551	431	876	1,217	117	510	249	306	325	390	80	62	138	118
15,377	5,809	167	591	1,864	164	394	198	274	416	452	105	67	101	82
16,520	6,804	767	1,255	1,060	76	364	351	527	527	308	128	65	193	106
18,720	7,924	752	1,419	1,235	124	534	417	609	561	405	143	91	234	135
15,487	6,892	596	1,237	1,031	64	380	338	672	441	252	155	74	198	100
20,041	9,179	866	1,666	1,470	192	600	455	781	564	373	231	153	161	140
17,206	8,788	614	1,688	1,509	113	372	426	852	553	339	173	136	254	188
17,161	8,523	595	1,695	1,406	85	380	417	834	397	290	98	97	130	138
19,547	8,531	827	1,765	1,399	97	476	403	724	433	297	167	111	188	116
13,330	5,014	479	923	819	29	450	185	335	288	174	108	46	171	108
17,342	7,476	593	1,435	1,070	106	489	387	644	422	335	150	106	182	154
15,614	6,687	600	1,240	974	131	466	383	584	369	287	122	82	112	107
13,934	5,531	483	892	881	39	370	220	485	454	264	138	67	188	113
22,191	10,708	891	2,236	1,732	216	525	535	973	561	389	160	148	215	148

(*f*) Middlesex Hospital is situated in this district (containing 259 patients on 8th April 1861), in which 238 deaths were registered in 1861.

(*g*) In this district is situated University College Hospital (containing on 8th April 1861, 119 patients), in which 158 deaths were registered in 1861; the Royal Free Hospital (containing 92 patients), where 65 deaths were registered; and also the Workhouse belonging to the Strand Union (containing 564 inmates), where 120 deaths were registered.

(*h*) In this district is situated the London Fever Hospital (containing on 8th April 1861, 24 patients), in which 117 deaths were registered in 1861; and the Small Pox Hospital (containing 17 patients), in which 33 deaths were registered.

(*i*) In this district is situated the German Hospital (containing 49 patients on 8th April 1861), in which 52 deaths were registered in 1861; the Workhouse belonging to East London Union (containing 587 inmates), in which 106 deaths were registered; and Pembroke House Lunatic Asylum (containing 131 patients), where 13 deaths were registered.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			I. LONDON—*continued.*					
			MIDDLESEX (Part of)—*continued.*					
44,417	42,979	13	Strand (*a*) - - - - H.	2,365	93	115	88	4
46,621	44,862	14	Holborn (*b*) - - - - H.	2,564	81	110	106	9
64,778	65,681	15	Clerkenwell - - - - -	2,173	59	99	90	6
54,055	57,073	16	St. Luke (*c*) - - - - H. L.	2,308	73	149	114	8
44,406	40,687	17	East London - - - - -	2,351	81	149	100	4
28,833	27,145	18	West London (*d*) - - - H.	4,501	208	164	138	6
55,932	45,555	19	London City - - - - -	1,767	51	68	62	4
109,257	129,364	20	Shoreditch (*e*) - - - W. L.	2,423	128	139	106	8
90,193	105,101	21	Bethnal Green (*f*) - - - H. L.	2,226	97	138	99	7
79,759	78,970	22	Whitechapel (*g*) - - - H.	3,041	157	204	90	4
48,376	48,891	23	St. George-in-the-East - - -	2,710	86	161	119	8
110,775	129,636	24*a* 24*b*	Stepney and Mile-End Old Town (*h*) W.	2,405	97	150	115	6
47,162	79,196	25	Poplar (*i*) - - - - W. L.	2,462	69	143	110	7
			SURREY (Part of).					
35,731	36,170	26	St. Saviour, Southwark (*j*) - H. H.	3,045	122	312	108	4
19,375	19,056	27	St. Olave, Southwark (*k*) - - H. H.	5,875	190	271	122	8
48,128	58,355	28	Bermondsey - - - - -	2,485	78	298	126	8
51,824	55,510	29	St. George, Southwark (*l*) - L.	2,583	88	256	97	8
64,816	82,220	30	Newington - - - - -	2,279	70	201	97	12
139,325	162,044	31	Lambeth - - - - - -	2,206	71	177	102	10
50,764	70,403	32	Wandsworth (*m*) - - - L.	2,043	62	157	77	10
54,667	71,488	33	Camberwell (*n*) - - - L. L.	2,161	53	188	83	8
17,805	24,502	34	Rotherhithe - - - - -	2,381	54	288	104	3
			KENT (Part of).					
99,365	127,670	35	Greenwich (*o*) - - - H. H. H.	2,482	93	178	90	8
34,835	65,757	36	Lewisham - - - - -	1,675	55	98	77	10

(*a*) King's College Hospital is in this district (containing on the 8th April 1861, 116 patients), in which 145 deaths were registered in 1861.

(*b*) In this district is situated the Hospital for Sick Children (containing 46 patients on the 8th April 1861), in which 101 deaths were registered in 1861.

(*c*) In this district is situated the City of London Lying-in Hospital (containing on the 8th April 1861, 57 patients), in which 29 deaths were registered in 1861; and St. Luke's Hospital (containing 157 patients), where 11 deaths were registered.

(*d*) St. Bartholomew's Hospital is in this district (containing on the 8th April 1861, 555 patients), in which 615 deaths were registered in 1861.

(*e*) A Workhouse belonging to St. Luke's parish is in this district (containing 684 inmates on the 8th April 1861), in which 177 deaths were registered in 1861; also Hoxton House Lunatic Asylum (containing 169 patients), where 15 deaths were registered.

(*f*) In this district is situated the Hospital for Diseases of the Chest (containing 65 patients on the 8th April 1861), in which 37 deaths were registered in 1861; and Bethnal House Lunatic Asylum (containing 238 patients), where 17 deaths were registered.

(*g*) London Hospital is in this district (containing 310 patients on the 8th April 1861), in which 360 deaths were registered in 1861.

(*h*) Workhouse (part of), belonging to the City of London, is in this district (containing 367 inmates on the 8th April 1861), in which 11 deaths were registered in 1861.

(*i*) Workhouse (part of), belonging to the City of London, is in this district (containing 509 inmates on the 8th April 1861), in which 153 deaths were registered in 1861; and Grove Hall Lunatic Asylum (containing 295 patients), in which 38 deaths were registered.

(*j*) Part of St. Thomas's Hospital is situated in this district (containing 79 patients on the 8th April 1861), in which 93 deaths were registered in 1861; and part of Guy's Hospital (containing 11 patients), where 26 deaths were registered.

(*k*) Part of St. Thomas's Hospital is in this district (containing 350 patients on the 8th April 1861), in which 276 deaths were registered in 1861; and part of Guy's Hospital (containing 473 patients), where 427 deaths were registered.

(*l*) Bethlehem Hospital Lunatic Asylum is in this district (containing 353 patients on the 8th April 1861), in which 24 deaths were registered in 1861.

(*m*) In this district is situated the Surrey County Lunatic Asylum (containing 921 patients on the 8th April 1861), in which 57 deaths were registered in 1861.

(*n*) Camberwell House Lunatic Asylum is in this district (containing 269 patients on the 8th April 1861), in which 41 deaths were registered in 1861; and Peckham House Lunatic Asylum (containing 235 patients), where 40 deaths were registered.

(*o*) In this district is situated the Dreadnought Hospital Ship (containing 172 patients on 8th April 1861), in which 126 deaths were registered in 1861; the Royal Marine Infirmary (containing 31 patients), where 24 deaths were registered; and the Garrison Hospital (containing 399 patients), in which 52 deaths were registered.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus.)	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
17,723	8,806	676	1,770	1,524	176	502	467	811	486	315	187	145	181	119
20,446	9,991	688	2,182	1,846	123	627	616	786	496	374	184	140	176	116
15,629	7,428	572	1,389	1,194	93	468	387	872	423	320	154	106	175	133
18,153	9,165	887	1,759	1,378	281	591	470	904	357	330	136	98	119	99
19,782	9,756	853	1,852	1,745	209	587	537	871	397	326	170	137	98	82
19,613	11,548	722	2,163	1,859	187	736	568	963	933	591	547	273	499	219
14,769	7,395	425	1,454	1,641	112	402	380	752	313	230	102	80	158	128
16,831	7,779	670	1,533	1,173	136	504	322	723	432	342	140	115	229	181
16,121	7,622	651	1,438	1,070	184	466	419	627	401	288	140	101	193	144
21,541	10,365	964	2,246	1,759	217	500	448	721	515	441	197	139	188	135
19,485	9,299	753	1,922	1,512	96	630	559	774	503	474	176	114	146	149
17,165	7,744	664	1,493	1,164	123	567	410	674	402	340	172	115	121	126
16,400	7,417	590	1,424	1,284	134	513	381	496	396	346	112	77	298	257
21,129	10,143	1,190	2,214	1,625	183	549	469	891	453	577	164	144	150	183
21,309	10,945	770	1,782	1 755	287	676	573	779	1,820	844	740	294	676	182
16,797	8,227	942	1,475	1,172	176	610	547	724	352	326	153	113	127	98
20,351	9,534	1,055	1,752	1,638	232	517	424	806	494	375	164	115	165	148
16,074	7,344	685	1,303	1,225	117	463	268	622	432	341	128	84	146	113
16,836	7,462	724	1,264	1,181	111	514	358	665	394	296	133	88	140	114
14,201	5,642	577	953	811	55	367	252	366	387	287	114	68	565	225
13,931	5,851	662	945	931	44	394	275	413	410	309	121	86	509	279
17,235	7,670	920	1,427	1,483	197	560	397	527	277	340	104	98	77	112
15,978	6,785	636	1,255	1,227	138	434	312	396	516	366	179	79	137	114
12,016	5,152	464	900	919	67	365	197	330	272	246	74	47	146	98

CORRECTED AVERAGE ANNUAL RATE of MORTALITY, during the Ten Years 1851-60, in the Districts of London (*see* Note).

No.	DISTRICTS.	Deaths Annually to 100,000 Persons living.
	MIDDLESEX (Part of).	
1	Kensington	1,985
2	Chelsea	2,615
3	St. George, Hanover Square	1,891
4	Westminster	2,581
5	St. Martin-in-the-Fields	2,345
6	St. James, Westminster	2,290
7	Marylebone	2,404
8	Hampstead	1,760
9	Pancras	2,232
10	Islington	2,095
11	Hackney	1,880
12	St. Giles	2,846
13	Strand	2,456
14	Holborn	2,641
15	Clerkenwell	2,309
16	St. Luke	2,736
17	East London	2,762
18	West London	2,495
19	London City	2,222
20	Shoreditch	2,421
21	Bethnal Green	2,352
	MIDDLESEX (part of)—*continued*.	
22	Whitechapel	2,841
23	St. George-in-the-East	2,879
24*a*	Stepney	2,553
24*b*	Mile End Old Town	
25	Poplar	2,359
	SURREY (part of).	
26	St Saviour, Southwark	2,863
27	St. Olave, Southwark	
28	Bermondsey	2,638
29	St. George, Southwark	2,744
30	Newington	2,426
31	Lambeth	2,353
32	Wandsworth	2,194
33	Camberwell	2,319
34	Rotherhithe	2,527
	KENT (part of).	
35	Greenwich	2,449
36	Lewisham	1,787

Note.—This Mortality represents the mean of the Males and Females, corrected for the Deaths in Hospitals by distributing them proportionally over the several Districts, and corrected also for deaths in Workhouses situated *out of* the Districts to which they belong.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			II. SOUTH EASTERN COUNTIES:					
			1. Surrey (Extra-Metropolitan).					
19,040	22,409	37	Epsom - - - - - -	1,620	49	51	41	10
16,148	18,642	38	Chertsey - - - - -	1,802	69	56	40	18
25,072	29,330	39	Guildford (*a*) - - - - H.	1,912	84	80	60	17
11,743	30,707	40	Farnham - - - - -	1,733	81	100	55	12
7,839	14,318	41	Farnborough - - - - -	1,426	62	62	32	5
13,552	13,907	42	Hambledon - - - - -	1,701	70	58	50	9
11,353	12,445	43	Dorking - - - - - -	1,733	70	58	36	12
14,329	20,109	44	Reigate (*b*) - - - - L.	1,718	46	39	52	35
8,868	9,642	45	Godstone - - - - -	1,656	80	65	49	16
31,888	46,474	46	Croydon - - - - - -	1,856	83	118	58	12
26,783	36,479	47	Kingston - - - - - -	1,791	73	88	41	9
15,906	18,802	48	Richmond - - - - -	1,989	101	141	59	7
			2. Kent (Extra-Metropolitan).					
17,637	20,368	49	Bromley - - - - - -	1,620	62	77	47	13
27,330	32,316	50	Dartford - - - - - -	1,766	90	86	80	7
16,633	18,782	51	Gravesend - - - - -	2,265	88	213	82	5
16,569	19,121	52	North Aylesford - - - -	2,044	126	182	48	11
2,845	2,861	53	Hoo - - - - - -	2,489	147	140	21	7
42,796	51,805	54	Medway (*c*) - - H. H. H. H.	2,310	79	140	79	5
19,579	21,447	55	Malling - - - - - -	1,925	91	112	47	5
22,095	22,039	56	Sevenoaks - - - - -	1,781	75	45	48	7
28,545	34,271	57	Tunbridge (*d*) - - - H.	2,024	88	106	55	32
36,097	38,670	58	Maidstone (*e*) - - - H. L.	2,265	75	146	61	14
13,751	13,584	59	Hollingbourn - - - - -	1,867	60	64	37	15
13,069	13,412	60	Cranbrook - - - - -	1,693	66	70	47	17
11,279	10,947	61	Tenterden - - - - -	1,931	67	55	55	26
13,314	15,137	62	West Ashford - - - -	1,982	105	82	60	32
11,960	12,286	63	East Ashford - - - - -	1,843	84	50	53	35
11,164	11,316	64	Bridge - - - - - -	1,816	67	90	60	36
14,100	16,643	65	Canterbury (*f*) - - - H.	2,288	100	100	54	20
14,661	16,161	66	Blean - - - - - -	1,830	99	104	55	21
16,684	18,867	67	Faversham - - - - -	1,967	122	93	74	19
12,026	14,775	68	Milton - - - - - -	2,073	126	246	37	13
13,385	18,494	69	Sheppey (*g*) - - - - H.	1,934	127	128	22	4
31,798	31,862	70	Thanet (*h*) - - - H. H.	2,108	93	168	77	5
25,162	25,900	71	Eastry - - - - - -	1,946	92	75	77	31
28,325	31,575	72	Dover - - - - - -	1,986	88	111	93	24
18,780	26,925	73	Elham - - - - - -	1,758	100	123	57	20
5,437	5,708	74	Romney Marsh - - - -	2,141	109	52	140	25
			3. Sussex.					
12,349	11,927	75	Rye - - - - - -	1,988	81	36	64	13
21,215	26,631	76	Hastings (*i*) - - - - H.	1,817	52	55	48	8

(*a*) In this district is situated the Invalid Convict Prison (containing 414 patients on the 8th April 1861), in which 26 deaths were registered in 1861.

(*b*) In this district is situated Earlswood Asylum for Idiots (containing 311 patients on 8th April 1861), in which the deaths of 22 persons were registered in 1861.

(*c*) In this district is situated the General Hospital (Fort Pitt), containing 279 patients on 8th April 1861, and in which 59 deaths were registered in 1861; Melville Hospital (containing 217 patients), where 31 deaths were registered; the Garrison Hospital (containing 287 patients), in which 21 deaths were registered; and Brompton Hospital (97 patients), where seven deaths were registered.

(*d*) An Infirmary is situated in this district (containing 20 patients on 8th April 1861), in which four deaths were registered in 1861.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
10,404	3,861	230	622	650	51	178	131	285	264	291	99	78	128	88
12,131	4,131	255	635	920	22	156	99	220	268	325	104	71	107	147
12,728	4,749	306	743	990	62	252	174	353	359	379	96	54	126	92
16,087	5,842	512	1,042	1,019	35	227	212	285	236	349	105	56	115	101
9,693	3,571	270	458	518	–	150	68	143	201	381	74	48	80	144
10,527	3,499	217	509	769	16	159	90	233	275	411	83	95	86	125
12,074	4,139	205	515	726	–	132	139	178	321	478	71	32	119	89
10,961	4,015	167	715	565	4	167	158	300	322	352	76	57	135	114
12,053	3,954	259	747	904	39	189	31	197	241	323	86	72	62	70
13,902	5,332	543	912	827	39	261	274	400	331	275	105	59	150	126
13,009	4,762	451	907	894	54	197	143	248	352	279	125	91	180	123
14,996	5,733	702	949	1,037	67	320	181	402	375	251	112	79	216	167
11,752	4,078	395	459	565	47	191	110	234	285	303	60	48	161	76
14,412	4,957	404	734	1,032	94	360	112	203	260	263	79	49	94	90
15,911	6,131	787	1,101	1,238	163	400	245	374	479	531	179	104	113	186
16,295	5,900	818	802	1,106	126	186	233	407	273	306	118	69	146	127
24,452	6,904	590	491	2,432	197	25	147	418	226	376	113	45	87	221
17,811	6,999	698	1,276	1,163	99	397	391	351	607	353	202	87	179	116
15,365	5,031	412	705	1,281	28	209	56	195	290	423	67	66	158	133
12,577	4,054	126	433	1,054	17	245	123	239	295	427	70	60	83	115
15,283	5,490	479	937	1,044	29	242	134	254	362	437	89	66	120	153
17,781	5,958	663	937	1,112	51	244	213	267	394	475	122	102	514	282
15,108	4,569	238	603	678	11	111	101	275	310	394	65	66	60	134
13,264	3,927	221	539	630	–	216	40	187	242	381	63	65	148	104
15,788	4,662	158	683	794	–	217	33	269	342	528	51	51	56	122
13,645	5,142	309	877	971	20	225	167	304	300	542	67	70	116	68
13,010	4,282	212	670	550	11	218	80	223	262	456	46	84	51	80
14,693	4,795	403	438	667	42	292	118	271	244	418	94	43	148	61
19,650	6,317	454	1,002	996	88	259	224	301	441	328	172	117	226	115
13,489	4,684	435	752	706	23	188	82	293	286	344	58	74	130	68
14,661	5,133	407	774	923	48	339	153	145	312	429	97	61	117	76
15,961	6,161	915	633	1,442	50	131	261	236	222	330	71	33	78	75
17,989	6,626	648	903	1,710	50	105	155	328	153	251	99	60	106	95
13,898	5,162	640	525	783	65	350	185	339	420	364	83	51	197	126
13,441	4,676	315	704	833	43	309	105	284	357	385	95	53	149	153
16,303	6,124	496	965	921	99	452	320	314	303	289	98	46	165	138
14,654	4,782	398	884	804	10	284	125	232	232	323	75	59	173	170
14,471	5,063	152	647	1,079	13	533	13	292	315	381	96	66	163	76
14,740	5,125	150	944	1,106	19	294	169	338	315	438	121	63	114	137
13,484	4,950	313	872	918	28	233	174	288	531	466	119	60	194	114

(*e*) In this district is situated the Kent County Lunatic Asylum (containing 607 patients on 8th April 1861), in which 64 deaths were registered in 1861; and the West Kent Infirmary (containing 17 patients), where 11 deaths were registered.

(*f*) The Kent and Canterbury Hospital is situated in this district (containing 95 patients on 8th April 1861), in which the deaths of 31 persons were registered in 1861.

(*g*) In this district is situated a Military Hospital (containing 64 patients on 8th April 1861), in which the deaths of 9 persons were registered in 1861.

(*h*) In this district is situated the Royal Sea Bathing Infirmary (containing 133 patients on 8th April 1861), in which the deaths of 17 persons were registered in 1861; also Dane Hill Metropolitan Infirmary (containing 108 patients), in which 14 deaths were registered.

(*i*) The East Sussex Infirmary is situated in this district (containing 18 patients on 8th April 1861), in which five deaths were registered in 1861.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			II. SOUTH EASTERN COUNTIES—*continued.*					
			3. Sussex—*continued.*					
14,232	12,680	77	Battle	1,703	68	40	48	62
8,347	10,721	78	Eastbourne	1,666	72	67	49	21
13,289	12,668	79	Hailsham	1,747	57	61	65	43
15,507	14,626	80	Ticehurst	1,919	103	64	35	33
17,631	17,260	81	Uckfield	1,894	52	52	89	36
13,216	14,097	82	East Grinstead	1,732	70	95	58	23
15,607	17,163	83	Cuckfield	1,755	93	45	49	24
25,719	26,995	84	Lewes (*a*) L.	1,947	102	64	47	31
65,569	77,693	85	Brighton (*b*) H.	2,200	91	116	83	12
16,867	24,053	86	Steyning	1,597	75	67	37	21
14,018	15,313	87	Horsham	1,765	134	63	17	20
9,629	9,397	88	Petworth	1,855	61	50	61	16
7,434	7,567	89	Thakcham	1,824	129	65	60	20
18,746	18,921	90	Worthing	1,790	96	50	46	23
15,248	14,811	91	Westhampnett *	1,813	71	73	79	23
14,438	14,775	92	Chichester * (*c*) H.	2,121	92	77	56	12
13,599	12,581	93	Midhurst	1,818	90	44	36	41
6,944	6,957	94	Westbourne	1,748	72	46	27	9
			4. Hampshire.					
7,212	7,212	95	Havant	1,872	132	54	31	3
72,126	94,828	96	Portsea Island (*d*) H. H. H.	2,278	133	131	89	6
16,908	22,653	97	Alverstoke (*e*) H.	2,583	121	165	89	6
13,924	14,864	98	Fareham (*f*) L	2,068	100	49	47	3
50,324	55,362	99	Isle of Wight	1,710	84	49	63	6
12,153	12,094	100	Lymington	1,773	97	33	63	11
8,482	10,438	101	Christchurch	1,840	57	18	34	39
5,675	5,357	102	Ringwood	1,833	51	22	53	7
6,834	6,377	103	Fordingbridge	2,038	115	47	91	8
13,540	13,509	104	New Forest	1,715	58	44	50	17
34,098	43,414	105	Southampton (*g*) H.	2,445	109	129	100	3
15,974	25,542	106	South Stoneham	1,700	80	86	60	3
10,840	10,771	107	Romsey	1,951	73	39	57	10
7,480	7,286	108	Stockbridge	1,937	127	56	56	11
25,661	26,607	109	Winchester (*h*) H.	2,030	98	83	65	6
10,697	10,665	110	Droxford	1,771	103	48	41	12
2,493	2,497	111	Catherington	1,915	124	68	60	8
7,814	7,853	112	Petersfield	1,939	74	59	63	38
7,418	7,182	113	Alresford	1,630	53	19	47	–
11,910	12,063	114	Alton	1,776	81	59	65	8
11,223	11,480	115	Hartley Wintney	1,927	80	73	55	33
17,466	17,429	116	Basingstoke	1,882	101	66	40	5
5,619	5,522	117	Whitchurch	2,213	135	72	52	39
17,266	17,132	118	Andover	1,843	77	17	10	3
8,909	8,517	119	Kingsclere	1,908	77	39	59	33
			5. Berkshire.					
20,815	19,999	120	Newbury	2,107	71	43	77	44
20,404	19,882	121	Hungerford	2,027	80	33	89	12
15,732	15,688	122	Faringdon	2,074	103	46	86	4

* Corrections have been made for changes which occurred in the limits of these districts between 1851 and 1860.

(*a*) The Sussex Lunatic Asylum is situated in this district (containing 393 patients on the 8th April 1861), in which the deaths of 48 persons were registered in 1861.

(*b*) In this district is situated the Sussex County Hospital (containing 109 patients on the 8th April 1861), in which the deaths of 72 persons were registered in 1861.

(*c*) An Infirmary is situated in this district (containing 34 patients on the 8th April 1861), in which 18 deaths were registered in 1861.

(*d*) In this district is situated the Royal Hospital (General) containing 55 patients on the 8th April 1861, and in which 22 deaths were registered in 1861; the Garrison Hospital (containing 251 patients), where 39 deaths were registered; and Mill Dam Hospital (containing 75 patients), in which 5 deaths were registered.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
12,234	4,020	158	845	629	–	137	63	153	250	338	105	136	105	106
10,211	3,831	225	585	712	–	217	135	382	280	392	69	24	97	31
13,370	3,916	141	796	628	–	194	63	120	270	535	34	74	79	95
15,062	4,564	252	737	639	23	131	84	252	346	457	76	46	112	195
14,663	4,392	157	641	672	8	240	75	185	312	484	67	23	161	90
11,249	3,761	262	590	611	5	185	72	241	303	363	89	49	98	137
12,207	4,023	167	430	949	–	149	114	224	304	471	49	46	104	135
11,944	4,262	281	572	1,030	25	135	76	244	496	508	106	41	201	162
19,572	7,546	794	983	1,356	152	380	310	563	499	372	98	62	196	158
15,280	4,833	406	762	1,033	21	161	186	271	287	304	85	50	152	76
12,285	3,909	172	758	652	15	51	131	141	362	518	54	57	93	125
11,885	3,938	74	613	891	–	237	82	139	415	509	56	44	130	134
11,272	3,497	202	424	732	10	164	19	212	348	560	41	45	81	70
11,074	3,968	202	512	863	29	198	74	227	393	445	59	34	147	102
11,482	3,719	246	440	1,074	–	271	82	189	366	518	57	39	109	74
13,047	4,685	286	670	1,061	23	286	181	239	670	463	93	76	256	193
11,188	3,884	100	514	1,169	35	136	112	236	372	539	53	58	101	133
9,917	3,726	211	300	990	22	133	89	245	386	610	67	41	138	70
11,371	3,475	219	481	678	87	120	87	175	442	405	88	51	161	107
16,637	7,050	625	1,137	1,354	247	438	286	352	441	387	128	84	197	177
14,811	6,301	797	921	1,012	145	442	256	231	1,061	357	212	48	476	76
13,306	4,210	185	770	877	17	157	79	101	430	505	88	63	561	296
11,008	4,059	213	566	810	27	281	145	288	418	413	81	46	121	124
10,379	3,621	123	711	717	–	208	98	123	352	448	106	53	114	114
14,180	4,176	86	716	785	–	147	69	181	405	571	92	73	80	188
13,627	4,053	84	641	501	–	167	56	111	261	466	60	74	167	135
13,079	4,363	144	875	631	–	266	177	78	379	473	110	86	91	137
11,711	3,626	149	597	807	66	138	66	171	351	437	79	36	119	124
19,137	7,938	682	1,438	1,160	216	470	313	425	520	435	118	66	261	142
12,428	4,468	453	795	694	42	202	112	192	321	357	57	37	142	151
13,027	4,352	163	651	743	14	184	156	184	373	449	101	53	225	179
11,744	4,865	206	769	683	11	238	238	358	369	452	80	67	153	94
13,647	4,815	438	866	1,015	71	259	110	191	436	443	130	76	156	136
13,351	3,949	184	821	686	7	127	64	106	293	471	41	42	97	127
14,768	4,388	239	627	866	30	179	90	90	409	410	63	110	117	154
16,849	4,800	162	849	534	10	229	95	229	276	459	133	77	109	102
11,600	3,390	75	352	704	–	171	32	139	324	414	63	61	92	28
12,862	3,993	221	614	756	25	258	86	233	337	333	73	54	126	171
11,825	4,520	342	803	1,059	13	171	138	184	373	510	32	37	169	100
12,913	4,100	224	672	811	8	110	216	245	364	493	91	62	84	137
19,153	5,346	319	609	997	–	208	97	332	353	479	141	150	87	104
12,722	4,114	78	689	703	9	37	128	315	401	446	111	46	115	122
12,759	4,267	151	830	1,090	–	176	–	218	261	440	78	62	168	118
14,037	4,833	171	783	741	15	293	65	243	382	427	136	89	140	119
17,960	5,171	138	937	889	11	313	119	186	314	412	75	66	139	171
18,367	5,363	195	1,202	725	10	394	83	175	365	529	57	76	126	121

(*e*) The Haslar Royal Naval Hospital is situated in this district (containing 635 patients on 8th April 1861), in which the deaths of 123 persons were registered in 1861.

(*f*) In this district is situated the County Lunatic Asylum (containing 538 patients on the 8th April 1861), in which the deaths of 53 persons were registered in 1861.

(*g*) The South Hants Infirmary is situated in this district (containing 69 patients on 8th April 1861), in which 32 deaths were registered in 1861.

(*h*) In this district is situated the County Hospital (containing 73 patients on 8th April 1861), in which 35 deaths were registered in 1861.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General.)	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			II. SOUTH EASTERN COUNTIES—*continued.*					
			5. Berkshire—*continued.*					
20,946	20,861	123	Abingdon (*a*) - - - - L	2,349	118	90	54	5
17,433	17,308	124	Wantage - - - - - -	2,049	98	71	86	10
14,163	14,017	125	Wallingford - - - - -	1,952	91	70	60	10
16,380	15,771	126	Bradfield - - - - - -	1,888	95	78	32	21
22,175	25,876	127	Reading (*b*) - - - - H.	2,168	62	101	55	7
13,668	14,465	128	Wokingham - - - - -	1,760	58	68	57	15
11,767	13,031	129	Cookham - - - - -	1,822	69	80	82	15
6,352	7,436	130	Easthampstead - - - - -	1,609	44	30	70	9
19,389	21,301	131	Windsor - - - - - -	1,985	87	57	77	8
			III. SOUTH MIDLAND COUNTIES:					
			6. Middlesex (Extra Metropolitan).					
13,973	15,976	132	Staines - - - - - -	1,917	93	118	45	18
19,475	23,155	133	Uxbridge (*c*) - - - - L.	2,189	99	98	60	6
41,325	50,516	134	Brentford - - - - -	2,158	76	167	78	8
15,916	19,238	135	Hendon - - - - - -	1,767	59	90	81	10
14,619	19,128	136	Barnet (*d*) - - - - L.	2,477	49	103	46	11
45,298	59,312	137	Edmonton - - - - -	1,800	61	107	63	8
			7. Hertfordshire.					
16,482	16,515	138	Ware - - - - - -	1,769	68	50	13	9
20,356	20,212	139	Bishop Stortford - - - -	1,791	65	72	28	4
26,355	25,014	140	Royston - - - - - -	1,852	103	78	23	2
24,729	25,603	141	Hitchin - - - - - -	1,875	66	88	26	10
15,090	15,301	142	Hertford - - - - - -	1,745	58	61	29	25
8,499	8,400	143	Hatfield - - - - - -	1,787	66	73	41	8
18,004	18,926	144	St. Albans - - - - -	1,946	97	79	35	3
18,800	20,355	145	Watford - - - - - -	1,999	106	60	39	8
13,120	13,922	146	Hemel Hempstead - - - -	2,071	135	85	40	1
12,527	13,204	147	Berkhampstead - - - -	2,137	110	139	52	5
			8. Buckinghamshire.					
18,637	18,240	148	Amersham - - - - - -	2,198	92	109	62	4
21,490	22,353	149	Eton - - - - - - -	1,839	76	79	45	8
33,562	35,138	150	Wycombe - - - - - -	2,050	94	91	48	9
23,071	23,600	151	Aylesbury (*e*) - - - - L.	2,154	117	113	24	7
9,376	9,265	152	Winslow - - - - - -	2,185	137	58	56	15
23,109	24,855	153	Newport Pagnel - - - -	2,081	67	69	65	5
14,410	13,756	154	Buckingham - - - - -	2,215	164	67	43	2
			9. Oxfordshire.					
17,895	18,200	155	Henley - - - - - - -	1,898	81	75	22	9
15,640	15,305	156	Thame - - - - - - -	2,089	138	69	52	13
5,771	17,185	157	Headington (*f*) - - - W. H.	2,315	120	134	59	4
0,172	20,037	158	Oxford - - - - - - -	2,070	72	139	71	—
5,562	15,555	159	Bicester - - - - - -	2,106	145	43	42	2
4,453	14,236	160	Woodstock - - - - - -	2,006	94	68	43	11
3,558	23,238	161	Witney - - - - - - -	2,013	105	82	55	8
17,427	17,306	162	Chipping Norton - - - -	1,943	94	41	74	1
29,769	30,171	163	Banbury - - - - - - -	2,132	106	79	49	14
			10. Northamptonshire.					
13,747	13,471	164	Brackley - - - - - - -	2,093	115	70	45	7
12,806	13,004	165	Towcester - - - - - -	2,268	101	137	52	13

(*a*) The Lunatic Asylum for Oxford and Berks is situated in this district (containing 474 patients on 8th April 1861), in which 66 deaths were registered in 1861.

(*b*) The Royal Berkshire Hospital is situated in this district, (containing 72 patients on 8th April 1861), in which 31 deaths were registered in 1861.

(*c*) In this district is situated the Middlesex Lunatic Asylum at Hanwell (containing 1,357 patients on 8th April 1861), in which the deaths of 147 persons were registered in 1861.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
19,049	5,897	407	1,264	937	54	205	195	295	386	497	117	86	393	262
15,167	5,152	283	842	713	4	363	233	354	310	463	94	58	72	107
12,632	4,341	253	662	506	27	161	151	312	362	465	101	62	100	151
14,812	4,362	321	693	661	18	129	106	133	330	373	129	110	100	113
13,967	5,888	543	993	893	73	300	240	423	483	425	144	54	155	108
12,793	3,966	321	863	487	22	260	28	205	273	230	169	174	146	108
12,989	4,328	452	562	635	67	372	55	134	266	383	95	92	137	162
11,505	3,363	131	372	701	–	219	66	186	322	430	26	65	100	109
12,459	5,355	293	917	930	26	375	202	336	469	346	115	52	244	182
15,182	5,352	684	832	1,065	37	180	238	207	261	332	95	58	134	82
15,084	5,397	462	802	1,034	66	255	177	185	333	279	221	142	785	334
17,106	6,320	778	987	943	86	363	316	260	442	323	128	78	185	94
12,725	4,761	455	790	735	51	363	193	267	352	273	93	50	171	122
13,613	4,702	526	728	866	53	213	234	308	472	420	110	72	2,319	752
12,650	4,909	545	689	832	72	279	193	282	315	269	81	60	169	123
11,403	3,795	174	740	598	55	73	151	215	327	339	93	48	137	154
12,783	4,028	276	803	603	22	131	58	331	274	350	105	51	88	124
17,447	5,030	417	820	787	42	107	147	254	303	429	59	39	110	102
17,477	5,286	454	521	1,044	37	83	190	362	311	367	68	54	131	112
13,224	4,336	263	595	1,538	58	158	84	232	402	365	95	59	133	110
14,612	4,104	306	693	783	9	144	54	207	244	331	109	51	101	142
18,038	5,545	332	888	1,160	112	190	220	276	329	303	89	53	119	96
16,146	5,601	303	818	1,329	140	204	267	212	367	401	77	68	158	95
18,000	5,996	432	1,058	836	113	183	167	308	303	368	130	61	162	114
17,721	6,284	699	1,089	868	41	262	268	256	327	449	118	92	118	147
18,524	6,108	482	952	932	40	227	124	283	323	422	79	65	87	146
13,000	4,515	422	834	648	43	201	97	247	358	351	121	46	131	104
16,915	5,474	367	812	620	72	152	196	288	278	420	92	73	97	102
17,495	5,409	508	1,044	543	13	117	196	309	314	441	103	77	179	152
18,028	5,527	312	935	801	–	215	148	371	276	501	62	33	88	89
16,829	5,551	302	954	792	24	289	98	174	292	459	78	71	96	95
16,972	5,752	315	1,085	593	21	189	110	246	316	487	87	66	66	163
13,968	4,543	342	852	681	38	75	146	292	334	360	99	65	144	91
16,367	5,234	275	1,085	545	38	204	194	308	272	458	100	72	88	85
17,500	5,696	666	1,054	689	69	268	190	199	502	455	105	107	140	142
18,982	7,065	763	1,426	784	215	358	270	333	444	365	82	53	181	83
16,692	5,427	181	826	557	28	223	102	260	357	465	76	43	79	145
15,915	5,126	344	723	718	21	195	215	339	348	448	54	72	69	69
14,509	5,060	349	1,023	547	46	241	156	166	331	421	83	53	105	143
14,958	4,915	184	1,003	453	13	269	124	162	236	426	64	53	63	103
15,944	5,671	282	958	753	45	235	157	230	296	451	93	71	118	113
16,228	5,490	233	740	700	11	205	85	342	239	416	100	76	91	105
21,639	6,711	395	1,234	857	36	255	170	231	248	432	75	66	104	80

(*d*) In this district is situated the County Lunatic Asylum at Colney Hatch (containing 1,790 patients on 8th April 1861), in which the deaths of 203 persons were registered in 1861.

(*e*) The County Lunatic Asylum is situated in this district (containing 256 patients on 8th April 1861), in which the deaths of 16 persons were registered in 1861.

(*f*) In this district is situated the Radcliffe Infirmary (containing 133 patients on 8th April 1861), in which the deaths of 33 persons were registered in 1861; and the Workhouse belonging to the Oxford Union (containing 188 inmates), where 33 deaths were registered.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			III. SOUTH MIDLAND COUNTIES—*continued.*					
			10. NORTHAMPTONSHIRE—*continued.*					
10,663	11,632	166	Potterspury - - - - -	1,999	111	77	51	13
9,157	9,928	167	Hardingstone - - - - -	2,009	132	40	24	5
33,857	41,160	168	Northampton (*a*) - - - H. L.	2,461	132	121	48	3
21,926	20,600	169	Daventry - - - - -	2,035	114	72	46	12
14,771	15,359	170	Brixworth - - - - -	2,043	140	71	51	2
21,367	24,224	171	Wellingborough - - - -	2,224	159	86	28	3
18,097	18,995	172	Kettering - - - - -	2,017	112	61	42	7
12,841	14,065	173	Thrapston - - - - -	1,976	139	45	59	1
15,655	15,463	174	Oundle - - - - - -	1,885	87	33	48	10
28,957	33,178	175	Peterborough - - - - -	1,999	98	106	70	16
			11. HUNTINGDONSHIRE.					
20,900	20,518	176	Huntingdon (*b*) - - - H.	1,968	147	103	57	14
20,594	19,654	177	St. Ives - - - - -	2,047	91	80	49	8
18,825	18,965	178	St. Neots - - - - -	1,889	110	84	42	11
			12. BEDFORDSHIRE.					
35,523	38,072	179	Bedford (*c*) - - - - H.	2,011	105	100	60	3
23,436	25,393	180	Biggleswade (*d*) - - - L.	2,148	139	147	66	15
16,542	16,970	181	Ampthill - - - - -	2,128	103	111	50	4
12,075	11,684	182	Woburn - - - - -	2,151	123	86	47	8
17,142	17,648	183	Leighton Buzzard - - - -	2,153	158	105	43	2
25,087	30,712	184	Luton - - - - - -	2,029	125	149	68	1
			13. CAMBRIDGESHIRE.					
11,065	10,966	185	Caxton - - - - - -	1,857	95	82	46	10
25,170	25,083	186	Chesterton (*e*) - - - - L.	2,001	114	76	79	6
27,815	26,361	187	Cambridge (*f*) - - - H.	2,032	82	83	68	7
14,148	13,510	188	Linton - - - - - -	1,853	99	87	85	6
30,655	28,675	189	Newmarket - - - - -	2,030	107	110	64	10
22,896	21,910	190	Ely - - - - - -	2,131	132	124	46	7
16,243	14,791	191	North Witchford - - - -	2,063	98	102	57	11
7,687	6,966	192	Whittlesey - - - - -	2,256	127	173	70	7
36,215	33,323	193	Wisbeach - - - - -	2,203	119	130	85	6
			IV. EASTERN COUNTIES.					
			14. ESSEX.					
34,395	59,319	194	West Ham - - - - -	1,951	76	160	80	7
15,631	16,549	195	Epping - - - - - -	1,793	72	89	49	7
11,855	11,317	196	Ongar - - - - - -	1,820	53	73	31	16
24,607	26,965	197	Romford - - - - - -	2,010	85	177	74	14
10,642	11,595	198	Orsett - - - - - -	2,127	167	157	75	6
13,787	15,031	199	Billericay (*g*) - - - - L.	2,064	75	94	59	13
32,272	32,765	200	Chelmsford - - - - -	1,928	110	61	58	20
15,838	18,282	201	Rochford - - - - -	2,053	189	113	42	26
22,137	22,556	202	Maldon - - - - - -	2,114	132	108	102	45
27,710	27,105	203	Tendring - - - - -	2,036	97	73	43	8
19,443	23,815	204	Colchester (*h*) - - - - H.	2,177	140	63	26	4
21,666	22,950	205	Lexden - - - - - -	1,889	139	78	36	12
16,099	16,324	206	Witham - - - - - -	2,055	67	66	22	21
19,253	18,482	207	Halstead - - - - - -	2,207	168	112	34	3
17,561	17,170	208	Braintree - - - - -	2,075	82	50	41	2
20,498	19,759	209	Dunmow - - - - -	1,975	94	59	30	6
20,716	19,721	210	Saffron Walden - - - -	1,936	82	57	81	6

(*a*) In this district is situated the General Infirmary (containing 116 patients on 8th April 1861), in which the deaths of 36 persons were registered in 1861; also the County Lunatic Asylum (containing 338 patients), where 34 deaths were registered.

(*b*) The County Hospital is situated in this district (containing 26 patients on 8th April 1861), in which eight deaths were registered in 1861.

(*c*) In this district is situated the General Infirmary and Fever Hospital (containing 79 patients on 8th April 1861), in which 18 deaths were registered in 1861.

(*d*) The Lunatic Asylum for Bedfordshire, Hertfordshire, and Huntingdonshire is situated in this district (containing 437 patients on 8th April 1861), in which 48 deaths were registered in 1861.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
14,170	5,800	261	663	777	33	181	147	281	196	370	59	71	101	154
15,104	5,177	152	629	578	65	65	195	304	255	514	51	40	55	94
21,762	8,386	633	1,178	1,224	456	225	402	370	380	430	84	72	209	197
16,216	5,419	277	919	694	52	199	137	137	267	374	80	56	89	68
17,451	5,423	290	932	898	10	266	164	280	202	421	65	79	73	26
19,484	6,749	388	908	1,236	107	155	281	442	295	477	55	71	67	108
19,515	6,082	293	764	1,176	89	189	201	262	223	326	51	65	94	94
16,090	5,576	167	710	845	11	280	151	210	245	417	63	53	32	102
1 ,942	5,002	126	486	761	9	196	149	257	245	407	56	42	112	115
19,849	6,341	563	796	986	112	300	160	380	295	339	62	43	82	115
18,128	5,535	435	812	579	21	230	144	319	320	362	63	72	105	77
18,261	5,855	287	771	778	11	207	196	298	388	491	91	49	149	72
16,697	5,007	319	566	517	15	180	60	195	273	384	59	49	91	74
16,412	5,308	456	711	739	16	240	133	307	293	452	65	58	220	174
22,813	6,812	758	1,099	944	20	293	195	370	263	374	95	75	127	113
20,115	6,200	428	1,056	877	42	162	175	349	273	618	99	62	65	124
19,672	6,055	333	1,162	823	57	220	176	239	295	542	67	56	108	93
20,472	6,241	524	889	877	44	171	139	310	312	512	90	60	87	97
20,573	7,033	890	1,040	944	171	305	310	326	317	357	91	61	81	108
16,764	5,267	429	541	299	–	218	118	330	245	444	43	31	95	39
17,747	5,747	357	805	522	3	351	134	334	316	461	50	38	136	86
15,947	6,341	528	1,120	812	109	340	251	324	571	394	79	53	185	108
14,529	4,272	398	749	439	10	289	165	248	346	467	66	30	92	105
17,012	5,375	456	1,080	504	10	219	162	248	360	541	67	44	97	90
22,016	6,836	544	775	604	3	221	187	282	267	388	57	43	117	84
22,601	6,958	466	1,006	646	9	282	217	189	280	333	92	49	80	107
23,772	7,272	819	875	875	9	345	251	493	347	310	80	42	100	41
26,001	7,605	479	836	177	48	365	189	464	255	306	108	85	96	101
15,438	5,973	821	1,064	943	79	327	268	390	336	313	99	63	156	120
12,623	4,305	329	714	606	28	183	160	376	260	348	95	56	127	119
14,916	4,215	359	878	583	19	96	58	231	140	234	244	227	139	125
16,079	5,548	777	812	965	60	290	131	268	340	315	89	69	135	112
18,850	6,241	749	853	1,036	52	326	130	332	287	433	109	68	126	100
13,277	4,624	357	774	824	11	214	82	247	370	422	142	89	471	309
13,765	4,597	264	696	719	7	222	116	277	389	457	69	43	92	68
15,740	5,122	435	696	849	34	184	77	294	266	395	152	82	127	70
12,786	5,362	388	701	890	96	397	112	445	348	507	83	43	125	80
15,867	5,238	304	890	629	30	156	116	347	262	548	77	52	118	99
17,648	6,255	364	1,001	1,331	49	106	155	337	446	499	139	72	139	119
14,562	4,614	316	847	692	16	155	68	267	259	512	85	67	90	110
16,655	5,284	311	1 003	742	60	69	147	408	458	532	83	58	132	136
17,893	6,047	493	981	935	27	105	291	283	391	629	108	77	98	151
18,743	5,816	209	963	1,096	31	200	217	377	436	653	62	32	122	165
15,326	4,694	267	946	727	–	115	160	189	357	524	71	51	63	83
13,648	4,557	261	700	747	15	319	120	250	346	501	86	77	69	123

(*e*) The County Lunatic Asylum is situated in this district (containing 198 patients on the 8th April 1861), in which 28 deaths were registered in 1861.

(*f*) In this district is situated Addenbrooke's Hospital (containing 84 patients on the 8th April 1861), in which 42 deaths were registered in 1861.

(*g*) In this district is situated the Essex County Lunatic Asylum (containing 453 patients on the 8th April 1861), in which the deaths of 40 persons were registered in 1861.

(*h*) In this district is situated the Essex and Colchester Hospital containing 52 patients on the 8th April 1861), in which the deaths of 6 persons were registered in 1861.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			IV. EASTERN COUNTIES—*cont^d.*					
			15. SUFFOLK.					
18,125	17,432	211	Risbridge - - - - -	1,990	113	50	45	32
30,834	31,415	212	Sudbury - - - - - -	2,018	101	72	46	6
18,107	17,376	213	Cosford - - - - - -	1,965	79	45	37	11
19,014	18,224	214	Thingoe - - - - - -	1,896	95	45	47	12
13,900	13,318	215	Bury St. Edmunds (*a*) - - H.W.	2,311	110	75	52	1
10,354	9,595	216	Mildenhall - - - - -	1,997	106	27	39	4
21,110	20,908	217	Stow - - - - - -	1,909	99	46	30	5
19,028	17,665	218	Hartismere - - - - -	1,955	69	43	35	10
15,900	14,694	219	Hoxne - - - - - -	2,022	83	54	44	5
17,219	16,174	220	Bosmere - - - - - -	1,875	84	59	43	7
12,493	12,736	221	Samford - - - - - -	1,957	116	56	44	11
32,759	37,881	222	Ipswich (*b*) - - - - H.	2,227	83	162	35	5
23,776	22,754	223	Woodbridge (*c*) - - - L.	2,043	68	78	32	8
21,477	20,720	224	Plomesgate - - - - -	1,991	55	49	39	12
27,883	26,848	225	Blything - - - - - -	2,021	62	59	66	15
14,014	13,619	226	Wangford - - - - -	2,059	67	74	76	7
20,163	24,050	227	Mutford - - - - - -	2,028	115	97	92	7
			16. NORFOLK.					
26,880	30,338	228	Yarmouth (*d*) - - - - H.	2,473	178	218	128	8
8,497	8,631	229	Flegg - - - - - -	1,987	98	146	126	13
15,614	14,516	230	Tunstead - - - - - -	2,119	85	53	112	96
21,722	20,874	231	Erpingham - - - - -	2,115	81	66	73	64
20,007	19,052	232	Aylesham - - - - -	2,106	77	73	70	55
11,890	11,749	233	St. Faiths - - - - -	1,754	82	65	74	7
68,195	74,440	234	Norwich (*e*) - - - - H.	2,492	103	192	65	7
13,565	12,818	235	Forehoe - - - - - -	2,032	118	49	108	6
11,545	11,290	236	Henstead - - - - - -	1,930	141	49	59	11
11,574	11,521	237	Blofield (*f*) - - - - L.	2,018	87	41	105	33
15,095	14,242	238	Loddon - - - - - -	1,943	73	62	76	14
26,395	25,248	239	Depwade - - - - - -	1,955	72	41	59	17
12,744	11,541	240	Guiltcross - - - - -	2,225	82	28	79	2
12,141	11,562	241	Wayland - - - - - -	2,003	100	16	50	2
29,389	28,020	242	Mitford - - - - - -	1,992	88	36	56	19
21,883	21,118	243	Walsingham - - - - -	2,047	78	55	48	11
18,148	17,596	244	Docking - - - - - -	2,055	112	44	67	12
13,557	13,486	245	Freebridge Lynn - - - -	1,828	81	47	50	7
20,530	16,701	246	King's Lynn (*g*) - - - H.	2,175	109	99	59	4
20,985	20,264	247	Downham - - - - -	2,051	96	91	30	11
14,320	13,747	248	Swaffham - - - - -	1,885	106	49	13	13
19,040	18,712	249	Thetford - - - - - -	2,027	81	42	53	5
			V. SOUTH WESTERN COUNTIES:					
			17. WILTSHIRE.					
17,620	19,237	250	Highworth - - - - - -	2,086	157	66	71	12
11,402	11,470	251	Cricklade - - - - - -	2,006	89	66	32	13
14,899	14,556	252	Malmsbury - - - - - -	1,862	101	37	28	18
21,407	22,029	253	Chippenham - - - - - -	2,069	92	59	85	25
9,173	8,885	254	Calne - - - - - -	1,980	91	37	39	8
10,263	9,774	255	Marlborough - - - - -	1,932	97	32	37	14
22,236	21,680	256	Devizes (*h*) - - - - L.	2,087	80	58	54	–
18,815	17,233	257	Melksham - - - - - -	2,181	84	82	29	14
11,607	10,475	258	Bradford-on-Avon - - - -	2,163	97	73	72	3

(*a*) The Suffolk General Hospital is situated in this district (containing 31 patients on the 8th April 1861), in which the deaths of 10 persons were registered in 1861; and the Workhouse belonging to the Thingoe Union (containing 100 inmates), where 7 deaths were registered.

(*b*) In this district is situated the East Suffolk Hospital (containing 25 patients on the 8th April 1861), in which six deaths were registered in 1861.

(*c*) The County Lunatic Asylum is situated in this district (containing 328 patients on 8th April 1861), in which 53 deaths were registered in 1861.

(*d*) In this district is situated the Royal Military Hospital (containing 67 patients on 8th April 1861), in which five deaths were registered in 1861.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
13,098	4,716	214	643	425	12	171	109	308	313	526	62	60	123	112
16,258	5,410	234	930	744	7	196	191	377	339	469	66	48	76	85
13,457	4,506	212	714	478	4	100	104	253	292	529	106	65	101	110
16,013	4,867	226	818	624	16	155	87	211	324	575	56	70	119	55
19,007	6,376	408	1,106	1,118	94	188	258	352	554	384	102	43	158	179
17,731	5,188	99	255	312	–	71	57	432	413	567	32	16	123	33
14,830	4,717	204	805	373	–	121	152	349	372	502	43	59	118	117
15,495	4,774	159	774	480	4	123	139	220	339	485	66	71	87	74
16,887	5,126	174	728	416	18	174	128	389	319	555	75	89	68	56
14,446	4,440	212	675	366	9	146	97	216	262	475	76	56	86	112
15,031	4,524	209	784	436	29	145	70	151	322	585	81	84	92	103
20,178	6,964	841	1,135	926	13	180	139	346	406	431	107	70	179	155
17,473	4,770	300	1,153	580	7	160	60	190	330	435	118	126	293	212
14,001	4,651	130	921	460	14	155	108	255	414	586	81	46	75	132
17,345	5,134	249	927	519	13	230	132	289	337	464	78	55	89	87
16,932	5,129	303	703	549	6	326	74	332	313	425	86	90	99	95
21,101	6,268	552	834	565	126	326	80	173	311	360	75	59	110	64
22,846	8,381	1,206	968	966	269	711	189	390	383	325	112	73	186	105
18,906	5,664	626	734	478	41	478	58	280	285	460	76	37	112	48
18,774	5,308	165	401	386	30	361	60	275	291	475	44	55	96	82
19,960	5,874	219	582	492	23	253	49	250	353	507	64	58	67	72
18,627	5,580	213	620	632	16	225	44	302	343	433	39	58	54	103
18,620	5,269	239	648	552	–	293	61	279	215	350	35	19	70	79
23,517	8,414	1,014	1,111	1,291	182	290	294	433	405	384	72	65	187	154
19,835	5,489	175	562	495	30	405	66	290	279	437	59	46	69	88
18,664	5,215	208	526	443	76	208	62	173	309	363	56	48	43	120
14,982	4,360	144	561	548	–	405	59	157	322	423	84	70	516	453
18,543	5,329	261	675	501	27	229	60	218	308	427	74	71	70	66
17,857	5,132	170	780	399	15	191	35	320	294	457	83	64	64	101
21,508	5,924	62	573	398	19	324	68	236	431	602	41	27	87	69
20,711	5,285	64	641	372	19	154	26	244	338	449	44	66	84	76
19,397	5,476	148	760	455	22	222	88	263	360	469	51	26	74	120
21,778	5,890	166	361	736	14	198	65	386	413	514	96	30	68	59
20,273	6,053	259	562	683	56	333	208	376	289	365	64	56	63	39
19,606	5,413	250	516	588	50	222	83	288	312	358	77	35	45	54
22,561	6,922	511	808	1,277	149	353	306	422	315	307	123	71	118	137
23,106	6,209	247	886	599	14	144	214	371	353	378	72	40	84	116
19,619	5,261	169	714	517	22	88	65	234	291	340	88	65	101	65
19,847	6,018	177	1,223	509	25	181	156	415	357	532	54	47	68	105
16,614	5,684	250	1,038	754	19	299	273	136	388	478	68	62	152	131
15,991	4,937	253	1,127	924	13	114	95	247	280	471	70	69	125	108
13,958	4,591	97	857	511	9	146	190	248	269	383	59	46	79	119
16,313	4,995	235	760	695	17	304	173	266	398	441	89	64	90	157
14,513	4,782	94	1,230	632	17	162	231	333	331	411	100	90	94	97
17,030	5,259	129	1,028	793	16	146	194	348	339	494	58	68	55	98
13,523	4,538	147	737	693	7	242	213	290	402	459	106	57	317	160
16,881	6,092	458	1,417	1,096	40	136	277	290	375	339	123	72	126	146
13,142	4,451	291	723	673	7	326	227	177	406	433	94	66	167	94

(*e*) The Norfolk and Norwich Hospital is situated in this district (containing 125 patients on 8th April 1861), in which 45 deaths were registered in 1861.

(*f*) In this district is situated the Norfolk Lunatic Asylum (containing 339 patients on 8th April 1861), in which 50 deaths were registered in 1861.

(*g*) In this district is situated the West Norfolk and Lynn Hospital (containing 47 patients on 8th April 1861), in which 13 deaths were registered in 1861.

(*h*) In this district is situated the County Lunatic Asylum (containing 246 patients on the 8th April 1861), in which the deaths of 50 persons were registered in 1861.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			V. SOUTH WESTERN COUNTIES—*cont^d.*					
			17. WILTSHIRE—*continued.*					
12,530	11,751	259	Westbury	2,207	68	65	71	8
17,067	15,942	260	Warminster	2,020	62	22	32	9
12,503	12,466	261	Pewsey	1,866	75	51	19	12
8,250	8,127	262	Amesbury	1,998	156	50	60	12
14,878	14,770	263	Alderbury (*a*) H. L.	2,268	77	41	81	26
8,930	9,039	264	Salisbury	2,368	43	79	76	3
10,742	10,674	265	Wilton	2,085	79	22	71	12
10,181	9,862	266	Tisbury	1,926	132	45	41	16
8,433	8,057	267	Mere	2,093	164	50	33	38
			18. DORSETSHIRE.					
13,029	12,986	268	Shaftesbury	1,953	65	33	68	13
10,382	10,334	269	Sturminster	2,005	84	22	35	30
14,837	14,827	270	Blandford	1,719	53	24	61	22
17,284	17,253	271	Wimborne	1,822	59	39	57	31
12,890	13,742	272	Poole	1,984	81	38	57	26
17,417	17,072	273	Wareham	1,851	100	20	67	15
22,037	27,328	274	Weymouth	1,783	66	38	94	8
25,002	24,773	275	Dorchester (*b*) H. L.	2,103	104	47	61	6
13,081	13,463	276	Sherborne	2,025	96	51	60	8
14,270	13,587	277	Beaminster	2,025	74	33	111	8
16,866	16,828	278	Bridport	2,095	100	36	91	5
			19. DEVONSHIRE.					
20,303	19,758	279	Axminster	1,957	78	33	51	3
23,824	22,729	280	Honiton	1,883	87	20	56	7
48,806	48,405	281	St. Thomas (*c*) L.	1,939	101	44	50	7
32,823	33,742	282	Exeter (*d*) H.	2,383	78	78	78	7
52,306	59,063	283	Newton Abbot	1,828	78	53	44	8
34,022	32,942	284	Totnes	1,865	70	36	65	9
21,377	19,394	285	Kingsbridge	1,790	66	18	91	14
19,723	20,502	286	Plympton St. Mary	1,858	91	39	93	6
52,221	62,599	287	Plymouth (*e*) H.	2,362	99	138	118	5
11,979	14,343	288	East Stonehouse (*f*) H.	2,706	160	141	109	5
38,180	50,440	289	Stoke Damerel (*g*) H.	2,294	126	113	98	5
32,386	35,265	290	Tavistock*	1,983	100	65	105	11
20,401	18,580	291	Okehampton	1,816	64	24	73	11
21,728	20,274	292	Crediton	1,763	69	18	61	10
39,563	37,356	293	Tiverton and (313 *b*) Dulverton	2,013	116	37	71	11
20,566	19,209	294	South Molton	1,771	70	17	33	14
38,178	36,293	295	Barnstaple (*h*) H.	1,764	52	45	56	9
17,491	16,876	296	Torrington	1,749	58	15	72	7
18,536	17,790	297	Bideford*	1,866	77	45	147	11
10,921	9,876	298	Holsworthy*	1,772	52	15	58	12
			20. CORNWALL.					
8,580	8,028	299	Stratton	1,956	65	19	76	22
8,448	7,784	300	Camelford	1,888	52	36	145	12
18,305	17,005	301	Launceston*	1,921	99	21	90	31
16,545	17,631	302	St. Germans	2,070	144	54	97	9

* Corrections have been made for changes which occurred in the limits of these districts between 1851 and 1860.

(*a*) In this district is situated the Salisbury Infirmary (containing 80 patients on 8th April 1861), in which 22 deaths were registered in 1861; also "Fisherton House" Lunatic Asylum (containing 386 patients), where 29 deaths were registered.

(*b*) In this district is situated the Dorset County Hospital (containing 50 patients on the 8th April 1861), in which 12 deaths were registered in 1861; also the Dorset County Lunatic Asylum (containing 181 patients), in which 11 deaths were registered.

(*c*) The Devon County Lunatic Asylum is situated in this district (containing 581 patients on 8th April 1861), in which 44 deaths were registered in 1861.

(*d*) The Devon and Exeter Hospital is situated in this district (containing 181 patients on 8th April 1861), in which 46 deaths were registered in 1861.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus.)	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus.)	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
18,140	5,797	355	1,196	616	19	293	237	237	300	381	109	85	136	96
13,851	4,589	90	869	617	19	123	152	147	315	394	93	69	90	151
14,106	4,591	148	1,209	592	–	83	89	261	271	395	77	45	57	140
14,340	4,925	178	880	749	9	281	215	346	305	478	143	47	85	184
14,238	4,811	114	647	559	21	316	212	171	452	444	147	112	314	221
14,803	6,202	246	1,289	982	202	316	430	175	560	459	128	100	240	180
12,518	4,975	65	661	755	43	316	331	302	387	506	84	69	59	128
13,134	4,292	138	946	715	15	138	38	238	252	381	109	39	144	126
14,975	5,086	201	841	908	10	115	191	315	316	431	121	50	109	163
13,673	4,854	104	865	621	37	372	140	329	314	411	79	105	160	37
17,114	5,059	59	754	533	–	141	185	237	337	488	97	99	111	106
11,767	4,375	77	669	515	10	252	247	185	284	360	83	30	86	70
12,535	4,348	136	652	673	13	200	166	196	279	513	91	43	144	93
13,486	4,945	69	1,369	828	46	219	184	178	352	352	110	93	140	148
12,080	4,477	59	504	652	8	269	223	156	309	450	58	47	105	63
13,406	5,167	209	985	912	103	484	272	176	225	272	72	56	122	120
15,549	5,081	161	711	670	19	253	89	212	352	437	120	57	146	117
15,137	5,675	221	741	1,069	48	281	221	263	290	369	83	75	141	91
16,067	5,055	147	912	546	33	382	71	224	198	323	114	72	125	93
15,889	5,770	158	1,075	794	154	478	189	268	323	318	130	75	73	102
11,356	4,665	147	500	690	43	209	260	310	271	337	82	48	127	71
11,882	4,545	76	605	931	31	274	236	167	294	363	97	65	128	117
12,855	4,565	223	712	695	107	243	193	196	309	361	112	52	347	171
18,272	7,143	521	1,229	1,313	280	444	328	338	504	384	148	79	173	127
12,912	4,692	228	715	784	135	224	145	270	387	398	100	67	147	106
11,040	4,210	87	572	838	113	299	115	177	296	289	98	78	85	115
10,449	4,001	34	578	657	53	467	106	213	301	303	78	56	108	82
10,417	4,328	168	602	625	69	476	210	206	264	282	94	71	181	149
20,404	8,796	764	1,487	1,242	463	669	561	451	333	315	97	72	180	125
18,913	8,349	690	1,309	1,238	324	537	601	395	778	287	257	62	239	139
18,680	8,166	636	1,401	1,086	260	559	578	438	298	330	119	81	138	147
13,153	5,344	303	1,039	733	111	437	237	289	384	265	138	68	99	117
9,389	3,717	63	555	709	75	291	126	327	317	370	72	55	101	85
9,763	3,670	62	524	656	62	311	150	271	217	303	114	77	137	101
12,813	4,789	160	819	784	43	326	199	205	305	400	115	84	102	95
12,250	3,814	74	542	803	12	140	62	238	249	337	77	59	79	113
10,987	3,904	171	720	447	55	275	122	297	324	278	87	65	116	74
10,215	3,843	54	464	450	54	276	85	352	276	362	81	40	115	17
10,051	4,225	144	781	585	32	589	172	312	263	325	96	57	86	69
9,225	3,615	30	696	526	–	170	82	304	190	405	83	75	77	54
10,016	4,047	47	601	545	28	300	28	178	256	291	89	72	233	49
13,839	4,853	89	616	464	–	517	187	259	237	316	59	35	98	62
11,368	4,347	97	822	602	25	301	97	280	229	361	124	85	127	95
11,887	5,004	263	950	450	54	459	335	419	355	319	93	46	143	89

(*e*) The South Devon Hospital is situated in this district (containing 53 patients on 8th April 1861), in which 21 deaths were registered in 1861.

(*f*) The Royal Naval Hospital is situated in this district (containing 308 patients on 8th April 1861), in which 75 deaths were registered in 1861.

(*g*) In this district is situated a Military Hospital (containing 290 patients on 8th April 1861), in which 20 deaths were registered in 1861.

(*h*) In this district the North Devon Infirmary is situated (containing 61 patients on 8th April 1861), in which eight deaths were registered in 1861.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General.)	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			V. SOUTH WESTERN COUNTIES—*continued.*					
			20. CORNWALL—*continued.*					
29,295	33,562	303	Liskeard* - - - - -	1,990	85	40	128	16
20,493	19,691	304	Bodmin (*a*) - - - - L.	2,003	45	42	66	24
17,402	16,754	305	St. Columb - - - - -	1,784	52	16	50	4
32,073	33,797	306	St. Austell - - - - -	1,997	78	44	100	16
42,270	43,070	307	Truro - - - - - -	2,013	75	39	74	11
22,052	23,332	308	Falmouth - - - - -	1,956	49	76	33	13
28,402	30,036	309	Helston - - - - -	2,043	83	30	108	4
53,628	57,173	310	Redruth - - - - -	2,117	69	41	88	5
53,517	54,554	311	Penzance - - - - -	2,060	69	73	69	5
2,627	2,431	312	Scilly Islands - - - - -	1,843	32	43	–	–
			21. SOMERSETSHIRE.					
19,895	19,918	313*a*	Williton - - - - - -	1,771	69	26	34	8
—	—	313*b*	Dulverton. *See* Tiverton (No. 293).	—	—	—	—	—
22,121	20,480	314	Wellington - - - - -	1,840	64	25	42	11
35,114	35,601	315	Taunton (*b*) - - - - H.	1,962	85	42	70	10
33,188	34,420	316	Bridgewater - - - - -	1,917	80	45	43	7
18,567	18,077	317	Langport - - - - -	1,868	118	39	61	3
26,085	25,591	318	Chard - - - - - -	2,037	91	35	83	4
28,463	28,189	319	Yeovil - - - - - -	2,148	117	36	84	4
21,311	21,500	320	Wincanton - - - - -	2,013	109	44	30	16
25,325	23,704	321	Frome - - - - - -	2,175	114	74	54	5
16,957	16,619	322	Shepton Mallet - - - -	1,995	79	29	15	13
21,342	21,889	323	Wells (*c*) - - - - L.	2,061	86	49	63	3
33,059	36,106	324	Axbridge - - - - -	1,743	69	41	60	13
25,227	23,721	325	Clutton - - - - - -	1,860	76	53	57	11
60,847	68,336	326	Bath (*d*) - - - - H. H.	2,203	73	90	35	5
21,615	21,802	327	Keynsham - - - - -	1,892	100	81	61	6
38,143	41,257	328	Bedminster (*e*) - - - H.	1,984	79	72	92	6
			VI. WEST MIDLAND COUNTIES:					
			22. GLOUCESTERSHIRE.					
65,716	66,027	329	Bristol (*f*) - - - - H. H.	2,671	97	130	99	7
77,950	94,687	330	Clifton (*g*) - - - - L. W.	2,100	84	128	89	7
18,526	18,763	331	Chipping Sodbury - - - -	1,926	64	72	18	10
16,454	16,499	332	Thornbury - - - - -	1,673	70	37	33	5
14,803	13,331	333	Dursley - - - - - -	2,116	63	41	38	14
18,124	20,189	334	Westbury-on-Severn - - - -	1,826	94	44	81	4
12,575	12,420	335	Newent - - - - - -	1,924	65	26	70	22
32,045	34,950	336	Gloucester (*h*) - - - H. L.	2,227	83	131	62	11
7,987	7,813	337	Wheatenhurst - - - - -	1,885	78	71	120	29
37,386	36,448	338	Stroud - - - - - -	2,171	86	61	91	9
6,254	6,110	339	Tetbury - - - - - -	1,828	68	52	37	16
21,327	20,934	340	Cirencester - - - - -	1,968	79	25	53	4
10,984	10,895	341	Northleach - - - - -	1,886	48	19	42	19
9,932	9,687	342	Stow-on-the-Wold - - - -	1,848	65	20	69	21
10,136	10,082	343	Winchcomb - - - - -	1,823	84	30	79	14
44,184	49,792	344	Cheltenham (*i*) - - - H.	1,899	52	80	57	10
15,131	14,908	345	Tewkesbury - - - - -	2,051	56	53	63	10

* Corrections have been made for changes which occurred in the limits of these districts between 1851 and 1860.

(*a*) The County Lunatic Asylum is situated in this district (containing 298 patients on 8th April 1861), in which 36 deaths were registered in 1861.

(*b*) In this district the Taunton and Somerset Hospital is situated (containing 54 patients on 8th April 1861), in which 24 deaths were registered in 1861.

(*c*) The Somerset County Lunatic Asylum is situated in this district containing 421 patients on 8th April 1861), in which 47 deaths were registered in 1861.

(*d*) In this district is situated the Bath General Hospital (containing 101 patients on 8th April 1861), in which two deaths were registered in 1861; also the Bath United Hospital (containing 78 patients), where 80 deaths were registered.

(*e*) Bristol General Hospital (part of) is situated in this district (containing 40 patients on 8th April 1861), in which 36 deaths were registered in 1861.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
14,448	5,780	197	1,056	764	56	553	206	282	315	318	98	50	72	98
13,831	4,920	71	689	740	94	274	90	282	341	354	98	41	311	178
13,074	4,396	56	699	630	30	222	122	274	298	390	59	60	111	65
11,007	5,582	202	866	810	78	416	74	376	307	358	108	44	99	105
15,655	5,627	163	719	693	52	298	197	456	353	362	94	54	114	111
16,302	5,782	238	805	840	54	153	165	372	327	278	94	68	115	110
15,786	5,506	154	509	397	90	451	159	369	443	330	97	28	87	69
19,461	6,902	171	695	637	195	398	280	500	456	336	128	46	100	85
18,824	6,508	316	722	451	337	315	162	319	382	346	113	54	87	68
9,132	3,080	72	580	870	–	–	–	217	410	507	85	55	75	156
9,881	3,704	116	578	642	45	150	86	199	252	352	103	52	84	108
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12,149	4,023	102	671	795	18	201	124	159	277	382	98	70	121	95
13,543	4,795	191	717	696	100	305	102	214	318	334	162	71	154	131
13,619	4,763	182	736	801	43	191	189	230	339	364	103	52	134	95
12,758	4,268	164	705	562	4	262	94	205	268	335	98	47	119	70
14,418	5,361	152	928	825	59	392	170	386	298	397	101	68	112	104
16,636	5,868	178	876	598	108	386	338	268	244	365	108	75	97	87
14,371	4,752	170	940	500	63	137	133	141	298	395	81	67	134	95
14,860	5,372	350	992	569	46	284	248	165	300	391	119	97	107	104
14,299	4,742	136	512	559	28	66	174	127	268	321	69	52	94	102
14,475	4,597	195	696	508	36	266	149	153	324	407	146	101	454	258
12,739	4,484	168	977	615	14	248	164	217	229	302	99	84	113	80
15,144	4,510	225	944	535	61	243	76	216	244	397	97	64	92	119
17,783	6,259	487	980	1,069	177	198	187	288	504	321	174	95	255	165
13,463	4,743	305	865	906	30	295	211	265	316	402	78	49	132	71
16,297	5,857	354	1,107	1,090	139	467	275	295	290	310	115	90	123	122
20,896	8,815	776	1,716	1,424	231	590	430	462	505	405	199	101	228	145
17,402	6,939	720	1,386	1,088	113	510	387	332	429	317	103	77	180	103
15,352	4,540	207	896	725	12	80	119	259	282	406	81	53	173	92
12,498	3,715	124	840	597	5	134	81	301	257	346	63	67	101	84
13,686	4,590	112	925	677	19	211	137	174	395	433	54	56	104	78
13,423	4,741	206	1,014	603	11	351	113	199	265	305	82	73	93	103
16,703	4,811	130	932	725	29	295	118	124	258	340	83	52	75	95
17,309	6,356	767	870	940	240	341	310	217	341	387	104	51	390	270
13,010	4,491	330	566	415	–	528	104	283	209	365	86	24	80	123
15,297	5,610	263	1,058	707	30	431	181	157	296	395	120	87	143	117
11,716	4,248	218	1,056	655	12	158	97	364	382	349	105	98	68	94
14,225	4,806	89	1,107	787	4	239	53	138	295	431	107	68	234	128
14,498	4,341	84	680	484	7	119	14	147	240	442	52	45	127	75
13,484	4,471	80	780	605	8	398	88	191	327	389	79	56	60	99
13,821	4,491	108	571	571	–	340	85	177	246	359	72	59	58	59
15,793	5,644	492	1,035	1,039	92	301	187	155	332	330	105	69	171	112
14,190	5,213	215	917	569	82	313	343	174	332	431	95	50	169	138

(*f*) In this district is situated part of the Bristol General Hospital (containing on 8th April 1861, 66 patients), in which the deaths of 42 persons were registered in 1861; also the Royal Infirmary (containing 224 patients), where 126 deaths were registered.

(*g*) The Bristol Lunatic Asylum is situated in this district (containing 121 patients on the 8th April 1861), in which 18 deaths were registered in 1861; and the City of Bristol Workhouse (containing 820 inmates), in which 118 deaths were registered.

(*h*) In this district is situated an Infirmary (containing 91 patients on 8th April 1861), in which 17 deaths were registered in 1861; also the County Lunatic Asylum (containing 513 patients), where 66 deaths were registered.

(*i*) In this district is situated the General Hospital (containing 63 patients on 8th April 1861), in which 9 deaths were registered in 1861.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			VI. WEST MIDLAND COUNTIES—*continued.*					
			23. HEREFORDSHIRE.					
13,139	14,880	346	Ledbury - - - - - -	1,805	55	26	49	24
15,502	16,306	347	Ross - - - - - -	2,020	76	21	67	13
35,154	39,287	348	Hereford (*a*) - - - - H.	2,099	62	45	56	16
8,718	9,018	349	Weobly - - - - - -	1,958	35	28	38	33
11,697	11,811	350	Bromyard - - - - -	1,967	73	28	37	26
14,910	15,494	351	Leominster - - - - -	2,077	51	35	49	22
			24. SHROPSHIRE.					
17,051	17,721	352	Ludlow - - - - - -	1,932	29	79	35	7
10,119	10,615	353	Clun - - - - - -	1,843	50	13	36	13
6,167	6,289	354	Church Stretton - - - -	1,802	34	45	47	31
8,633	8,304	355	Cleobury Mortimer - - - -	1,817	59	28	50	11
15,608	15,920	356	Bridgnorth - - - - -	1,899	55	73	33	23
11,483	11,994	357	Shiffnal - - - - - -	1,831	89	54	55	10
27,627	30,403	358	Madeley - - - - - -	2,140	90	31	80	12
19,174	19,455	359	Atcham - - - - - -	1,812	48	21	55	21
23,104	25,784	360	Shrewsbury (*b*) - - - H. L.	2,518	97	56	61	5
22,795	23,817	361	Oswestry - - - - -	1,895	67	25	39	14
15,239	14,611	362	Ellesmere * - - - - -	1,926	55	46	63	36
10,625	10,644	363 *a*	Wem * - - - - - -	2,001	62	53	66	36
11,370	11,272	363 *b*	Whitchurch * - - - - -	1,959	73	56	65	7
14,160	14,260	364	Market Drayton - - - -	1,979	62	44	77	27
20,729	23,873	365	Wellington - - - - -	2,171	94	57	70	12
15,620	15,447	366	Newport - - - - -	1,969	69	66	101	15
			25. STAFFORDSHIRE.					
22,787	24,474	367	Stafford (*c*) - - - H. L. L.	2,227	85	84	64	18
19,344	21,926	368	Stone - - - - - -	2,024	55	51	60	8
20,814	24,567	369	Newcastle-under-Lyme - - -	2,271	83	64	132	13
41,916	54,356	370	Wolstanton - - - - -	2,617	87	147	144	14
57,942	71,308	371	Stoke-upon-Trent (*d*) - - H.	2,621	91	125	156	11
23,031	24,806	372	Leek - - - - - -	2,397	62	80	198	31
18,142	20,988	373	Cheadle - - - - - -	2,078	49	57	65	15
15,140	14,787	374	Uttoxeter - - - - -	2,024	47	42	79	9
31,843	41,065	375	Burton-upon-Trent (*e*) - - L.	2,058	49	68	87	14
13,996	15,504	376	Tamworth - - - - -	1,977	68	77	94	26
25,279	27,541	377	Lichfield - - - - -	1,975	61	58	97	15
16,850	18,662	378	Penkridge - - - - -	1,995	90	78	66	25
104,158	126,902	379	Wolverhampton (*f*) - - H.	2,761	137	182	106	10
43,044	59,908	380	Walsall - - - - - -	2,590	164	144	111	8
69,729	92,480	381	West Bromwich - - - -	2,442	154	111	86	9
106,530	130,267	382	Dudley - - - - - -	2,608	125	228	106	10
			26. WORCESTERSHIRE.					
57,350	68,726	383	Stourbridge - - - - -	2,276	102	132	63	10
32,917	30,307	384	Kidderminster - - - - -	2,133	100	80	73	10
7,047	7,366	385	Tenbury - - - - - -	1,725	39	29	43	24

* Corrections have been made for changes which occurred in the limits of these districts between 1851 and 1860.

(*a*) In this district is situated an Infirmary (containing 69 patients on 8th April 1861), in which 26 deaths were registered in 1861.

(*b*) In this district is situated the Salop Infirmary (containing 101 patients on 8th April 1861), in which 46 deaths were registered in 1861; also the Shropshire and Montgomeryshire Lunatic Asylum (containing 360 patients), in which 27 deaths were registered.

(*c*) In this district is situated the County Infirmary (containing 77 patients on 8th April 1861), in which 28 deaths were registered in 1861; the County Lunatic Asylum (containing 487 patients), where 64 deaths were registered; and the Coton Hill Lunatic Asylum (containing 115 patients), in which 4 deaths were registered.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Disease of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
14,079	4,254	136	732	572	47	183	106	130	263	381	80	39	111	35
15,492	4,848	105	939	459	80	295	140	145	318	372	67	51	158	85
16,228	5,154	217	768	1,133	37	260	167	128	319	420	133	70	167	120
13,465	4,030	74	631	780	28	167	56	130	261	343	123	96	193	44
15,236	4,530	100	426	673	27	127	40	147	237	322	82	78	56	52
14,731	4,738	182	555	846	104	223	114	197	302	329	123	47	98	64
15,801	4,734	347	798	907	33	133	138	256	225	349	108	104	173	105
15,571	4,472	38	615	942	23	137	99	182	324	419	88	75	73	31
11,922	3,647	191	572	673	–	140	114	165	284	394	95	60	202	87
12,333	3,935	74	540	763	28	140	149	205	249	444	45	59	123	72
15,286	4,587	289	781	1,005	36	157	91	183	265	339	58	56	129	92
13,222	4,771	219	901	811	19	264	58	238	274	387	97	69	82	78
17,528	6,389	140	934	1,551	128	353	242	305	238	420	101	96	90	74
13,711	4,066	73	564	848	26	211	65	168	267	372	78	59	77	85
16,908	6,719	279	1,020	2,338	382	367	132	209	508	478	175	97	441	212
13,410	4,393	52	430	1,411	62	180	101	281	360	452	80	59	98	88
13,619	4,553	154	620	1,070	23	273	68	159	285	424	89	73	84	86
13,129	4,540	249	422	843	35	297	48	159	328	324	65	45	57	122
16,612	5,159	273	695	865	9	310	244	291	344	297	32	47	81	164
14,982	5,067	217	872	1,047	23	357	164	152	304	418	75	67	104	125
17,280	6,249	256	947	1,342	114	303	319	341	317	338	89	102	89	102
15,103	5,122	312	789	921	10	463	234	185	269	327	95	75	104	98
16,111	5,639	395	997	861	176	345	162	203	401	488	81	67	614	294
16,618	5,683	226	848	1,512	15	311	150	230	366	456	91	60	165	118
18,117	7,250	305	1,174	2,102	97	573	190	315	286	498	105	67	104	90
23,105	9,395	757	1,760	2,133	62	664	403	284	301	431	219	132	151	136
22,978	9,204	687	1,433	2,147	123	726	378	378	405	452	205	71	178	153
16,675	6,938	396	876	1,540	62	717	299	455	460	666	86	46	117	100
14,774	5,233	187	654	1,329	18	212	230	309	375	477	108	64	116	96
14,246	4,746	166	652	1,066	6	376	144	127	345	491	73	73	82	86
14,286	5,549	281	862	1,261	102	410	285	253	335	433	64	55	290	159
14,248	5,148	371	677	1,474	155	406	296	201	265	411	58	55	76	106
13,012	4,814	218	778	1,103	113	459	122	215	273	382	79	79	104	106
16,210	5,387	332	786	1,071	80	282	197	160	233	473	66	60	94	89
24,950	10,480	1,008	2,096	1,691	185	520	723	367	280	339	167	110	151	129
22,600	9,435	729	1,680	1,586	195	534	590	330	223	298	112	119	114	122
19,228	8,525	547	1,650	1,310	227	380	698	203	233	297	122	84	124	122
22,507	9,349	1,114	1,661	1,501	203	482	621	304	191	245	142	91	104	106
20,202	7,628	657	1,674	1,084	185	287	441	215	242	342	104	75	131	103
17,248	6,501	444	1,188	994	76	393	344	169	355	369	112	75	116	102
10,221	3,337	80	424	539	11	195	80	195	166	355	88	46	185	14

(*d*) North Staffordshire Infirmary is situated in this district (containing 99 patients on 8th April 1861), in which 50 deaths were registered in 1861.

(*e*) Derby County Lunatic Asylum is situated in this district (containing 287 patients on 8th April 1861), in which 38 deaths were registered in 1861.

(*f*) South Staffordshire General Hospital is situated in this district (containing 76 patients on 8th April 1861), in which 34 deaths were registered in 1861.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			VI. WEST MIDLAND COUNTIES—*continued.*					
			26. Worcestershire—*continued.*					
13,811	15,098	386	Martley	1,786	62	30	68	14
27,677	30,969	387	Worcester (*a*) H.	2,312	69	120	65	3
18,070	21,010	388	Upton-on-Severn (*b*) L.	2,002	65	51	48	25
14,463	14,767	389	Evesham	1,875	70	53	64	11
13,553	13,865	390	Pershore	1,749	42	72	37	4
18,152	19,289	391	Droitwich	1,814	51	57	57	17
24,822	26,207	392	Bromsgrove	2,038	63	74	67	6
30,871	47,349	393	King's Norton	1,712	71	78	58	19
			27. Warwickshire.					
173,951	212,621	394	Birmingham (*c*) H. H. L.	2,651	107	219	106	8
66,852	100,522	395	Aston	2,101	75	172	98	17
11,267	11,290	396	Meriden	1,849	54	97	41	12
11,448	12,118	397	Atherstone	1,983	75	129	62	4
13,532	13,054	398	Nuneaton	2,253	140	94	50	1
18,527	19,997	399	Foleshill	2,472	135	157	38	14
36,812	41,647	400	Coventry (*d*) H.	2,527	107	305	73	12
23,477	24,436	401	Rugby	1,876	82	60	56	19
11,931	13,231	402	Solihull	1,828	48	77	41	17
41,934	44,047	403	Warwick (*e*) H. L.	2,068	107	87	59	5
20,789	21,249	404	Stratford-on-Avon	1,936	54	71	72	4
17,482	16,878	405	Alcester	2,068	72	80	34	8
20,651	19,852	406	Shipston-on-Stour	1,968	78	78	37	6
10,504	10,392	407	Southam	1,875	119	59	42	10
			VII. NORTH MIDLAND COUNTIES:					
			28. Leicestershire.					
16,194	15,515	408	Lutterworth	1,910	67	44	81	15
15,839	16,059	409	Market Harborough	1,990	69	65	75	15
7,009	7,272	410	Billesdon	1,591	41	24	39	14
14,190	14,171	411	Blaby	2,148	121	138	87	4
16,558	16,374	412	Hinckley	2,363	126	103	60	7
13,633	13,428	413	Market Bosworth	1,885	92	26	41	11
25,895	28,480	414	Ashby-de-la-Zouch	2,084	63	51	91	24
25,368	24,210	415	Loughborough	2,276	95	75	58	5
20,059	19,778	416	Barrow-upon-Soar	2,167	83	87	72	5
60,642	68,190	417	Leicester (*f*) H. L.	2,541	136	217	94	5
20,533	20,171	418	Melton Mowbray	1,872	77	44	61	7
			29. Rutlandshire.					
11,513	11,112	419	Oakham	1,876	79	76	54	4
12,759	12,367	420	Uppingham	1,756	45	29	53	27
			30. Lincolnshire.					
19,755	18,213	421	Stamford (*g*) H.	1,964	76	66	109	7
22,362	21,293	422	Bourn	1,855	87	68	49	16
21,290	20,949	423	Spalding	2,047	74	94	62	36

(*a*) In this district is situated the Worcester Infirmary (containing 99 patients on 8th April 1861), in which 36 deaths were registered in 1861.

(*b*) In this district is situated the Worcester County and City Pauper Lunatic Asylum (containing 440 patients on 8th April 1861), in which the deaths of 39 persons were registered in 1861.

(*c*) In this district is situated the Queen's Hospital (containing 135 patients on 8th April 1861), in which 79 deaths were registered in 1861; General Hospital (containing 228 patients), 210 deaths were registered; and the Pauper Lunatic Asylum (containing 360 patients), 30 deaths were registered.

(*d*) The Coventry and Warwickshire Hospital is situated in this district (containing 21 patients on 8th April 1861), in which 8 deaths were registered in 1861.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
13,467	4,055	157	534	484	6	259	62	129	230	346	61	51	195	48
17,598	6,764	686	1,103	1,003	123	414	255	296	382	384	145	73	184	130
13,910	4,541	211	695	989	18	211	66	180	262	357	87	84	466	250
14,146	4,961	177	494	1,008	36	270	286	208	240	485	79	29	96	82
13,924	4,123	259	519	581	39	169	102	147	244	301	52	49	76	29
14,484	4,652	259	631	534	49	230	137	137	243	384	74	40	143	88
15,809	6,117	307	1,294	723	152	344	247	146	300	339	67	67	100	116
15,166	5,384	435	1,133	835	87	247	222	188	240	255	78	56	142	112
21,200	9,447	1,296	1,699	1,209	183	522	449	551	483	347	174	121	232	155
17,847	7,161	945	1,344	946	135	438	270	359	313	296	106	89	131	118
13,840	4,515	353	944	740	27	197	41	136	232	292	100	63	176	61
16,089	5,446	492	762	781	25	369	283	264	188	312	65	50	172	51
22,713	7,090	450	1,299	1,253	231	329	306	214	340	428	50	29	95	127
23,361	8,470	744	1,377	1,010	300	199	409	203	361	416	77	59	82	82
27,557	10,191	1,983	1,580	1,163	157	433	490	371	350	367	138	107	151	137
14,836	5,103	223	756	898	90	210	187	223	264	374	62	51	115	79
11,758	4,067	318	878	675	19	121	76	127	282	285	108	80	122	112
16,564	5,847	583	1,069	845	133	302	202	226	409	380	133	52	223	152
13,202	4,750	270	782	408	52	311	207	167	283	382	87	66	91	110
20,335	5,986	400	1,392	588	121	166	242	193	334	406	137	72	118	70
15,267	4,948	314	788	677	19	161	149	279	244	405	78	55	132	120
16,746	4,909	203	748	538	49	196	91	245	209	428	76	59	52	120
13,782	4,656	225	674	1,163	24	391	176	191	228	356	94	67	92	129
17,051	5,280	219	712	1,000	24	312	151	385	239	452	54	48	87	99
12,972	3,743	78	525	1,006	–	190	11	212	249	344	58	42	55	43
21,413	6,831	701	963	1,429	20	461	195	230	293	413	87	68	109	118
21,010	7,406	391	1,017	1,743	23	350	304	336	315	416	86	96	103	135
13,359	4,645	117	564	1,580	22	207	168	251	263	494	80	47	59	74
16,743	6,058	226	1,069	1,727	108	423	251	179	256	404	75	49	90	77
21,315	7,157	370	1,248	1,655	135	282	309	193	355	492	84	77	96	83
20,662	6,495	400	781	1,604	57	396	240	309	299	523	76	73	75	103
23,309	9,389	1,416	1,231	1,544	116	505	453	459	390	399	122	77	198	126
14,282	4,671	200	952	1,039	49	261	159	125	240	431	61	66	65	132
13,177	4,483	289	591	837	21	225	106	176	255	393	126	79	86	115
13,325	4,199	109	689	973	–	254	60	193	277	397	63	28	105	95
17,718	5,574	373	741	983	25	500	161	318	232	312	77	58	138	108
17,914	5,354	286	673	1,438	17	197	121	197	225	357	68	50	81	92
21,845	6,268	457	731	1,016	18	307	216	344	219	357	126	74	100	133

(*e*) In this district is situated the Warneford Hospital (containing 43 patients on 8th April 1861), in which 7 deaths were registered in 1861; also the Warwick County Lunatic Asylum (containing 338 patients), where 32 deaths were registered.

(*f*) In this district is situated an Infirmary (containing 83 patients on 8th April 1861), in which the deaths of 51 persons were registered in 1861; also the Leicester and Rutland Lunatic Asylum (containing 379 patients), 47 deaths were registered.

(*g*) Stamford and Rutland General Infirmary is situated in this district (containing 23 patients on 8th April 1861), in which 7 deaths were registered in 1861.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			VII. NORTH MIDLAND COUNTIES—*cont^d.*					
			30. LINCOLNSHIRE—*continued.*					
19,134	18,402	424	Holbeach - - - - -	2,134	95	84	125	20
38,444	37,969	425	Boston - - - - - -	1,949	70	51	68	28
24,551	24,914	426	Sleaford - - - - - -	1,883	89	99	91	34
29,850	28,886	427	Grantham - - - - -	1,874	97	53	110	25
42,062	47,063	428	Lincoln (*a*) - - - - H. L.	2,044	106	72	104	30
25,089	24,718	429	Horncastle - - - - -	1,894	72	39	88	70
28,937	28,799	430	Spilsby - - - - - -	1,899	72	35	47	40
33,427	34,711	431	Louth - - - - - -	1,999	63	53	65	34
34,291	37,517	432	Caistor - - - - - -	1,879	97	109	86	42
33,786	34,731	433	Glanford Brigg - - - -	1,871	71	77	81	20
27,258	25,973	434	Gainsborough - - - - -	1,994	70	88	80	64
			31. NOTTINGHAMSHIRE.					
22,758	22,677	435	East Retford - - - - -	1,912	100	57	83	28
19,153	20,704	436	Worksop - - - - - -	1,951	71	51	88	26
30,146	30,593	437	Mansfield - - - - -	2,128	86	38	72	11
64,923	73,285	438	Basford - - - - - -	2,293	98	87	77	11
26,776	30,479	439	Radford (*b*) - - - - L.	2,529	115	196	113	10
58,419	75,765	440	Nottingham (*c*) - - - H.	2,666	105	198	83	11
25,616	24,408	441	Southwell - - - - -	1,852	51	21	79	16
30,348	30,208	442	Newark - - - - - -	1,968	79	57	121	27
16,241	15,670	443	Bingham - - - - -	1,884	83	95	55	10
			32. DERBYSHIRE.					
32,322	31,113	444	Shardlow - - - - -	2,031	64	67	84	6
43,684	51,049	445	Derby (*d*) - - - - H.	2,408	94	103	90	16
46,872	51,711	446	Belper - - - - - -	2,050	89	55	74	14
20,932	20,648	447	Ashbourne - - - - -	1,955	60	33	84	10
45,795	61,779	448	Chesterfield - - - - -	2,208	94	59	95	38
29,880	31,378	449	Bakewell - - - - -	2,010	54	24	84	5
11,496	14,020	450	Chapel-en-le-Frith - - - -	1,970	75	26	74	32
29,712	32,176	451	Hayfield - - - - - -	2,331	105	74	146	18
			VIII. NORTH WESTERN COUNTIES:					
			33. CHESHIRE.					
90,208	94,360	452	Stockport (*e*) - - - - H. L.	2,562	93	236	101	4
63,327	61,543	453	Macclesfield - - - - -	2,483	98	119	86	10
34,043	40,517	454	Altrincham - - - - -	1,981	62	89	60	8
25,797	26,792	455	Runcorn - - - - -	2,110	61	103	133	11
31,202	33,338	456	Northwich - - - - -	2,229	86	60	101	8
30,512	34,328	457	Congleton - - - - -	2,334	72	54	108	13
35,941	40,955	458	Nantwich* - - - - -	2,002	67	49	117	24
52,950	58,501	459	Great Boughton (*f*) (Chester)* H. L.	2,217	105	68	80	9
57,157	79,840	460	Wirrall (*g*) - - - - H.	1,906	67	104	114	9

* Corrections have been made for changes which occurred in the limits of these districts between 1851 and 1860.

(*a*) In this district is situated the County Hospital (containing 59 patients on 8th April 1861), in which 22 deaths were registered in 1861; also the Lincoln County Lunatic Asylum (containing 387 patients), where 44 deaths were registered.

(*b*) Nottingham County Lunatic Asylum is situated in this district (containing on 8th April 1861, 282 patients), in which 40 deaths were registered in 1861.

(*c*) In this district is situated the General Hospital (containing 137 patients, on 8th April 1861), in which 56 deaths were registered in 1861.

(*d*) Derby Infirmary is situated in this district (containing 111 patients, on 8th April 1861), in which 39 deaths were registered in 1861.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis.)	Diseases of the Brain (including Hydrocephalus.)	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
23,495	6,894	321	837	908	20	472	151	472	278	372	134	60	82	92
18,080	5,754	199	692	1,542	22	307	177	346	290	383	83	54	116	64
17,190	5,457	414	624	1,151	24	363	132	261	202	308	88	49	100	67
16,181	5,418	257	727	1,280	57	493	144	206	246	328	74	34	92	78
17,292	5,867	365	599	1,685	8	481	188	221	294	365	80	51	277	126
17,505	5,136	162	343	1,488	12	357	162	174	229	330	71	35	90	81
19,119	5,062	134	283	1,718	3	136	149	207	308	537	63	47	96	58
17,843	5,488	204	303	1,868	11	260	198	236	331	463	63	58	121	86
16,915	5,461	498	446	1,550	30	376	194	196	224	350	66	54	102	85
16,243	4,898	329	567	1,404	11	356	148	247	303	458	65	45	126	134
18,266	5,818	365	726	1,353	32	371	165	235	235	349	59	55	137	124
15,353	5,114	204	622	1,624	17	377	129	234	285	366	71	56	115	97
15,124	5,213	103	571	1,643	42	417	142	245	277	440	52	41	98	54
19,794	6,405	145	634	1,811	54	349	292	233	297	438	67	63	79	138
20,287	7,346	442	1,280	1,651	200	363	306	259	333	540	60	72	80	72
23,892	9,317	1,123	1,503	2,032	84	594	521	477	389	506	93	97	235	159
25,293	10,226	1,262	1,584	2,263	147	515	571	523	447	430	129	121	199	156
15,219	4,607	44	485	1,860	41	362	132	208	270	416	71	94	99	78
16,590	5,340	238	623	1,313	37	559	236	181	279	403	61	61	101	126
14,199	5,142	455	1,274	1,113	47	260	170	152	276	458	57	51	82	73
15,117	5,285	255	719	1,214	83	410	209	267	331	505	62	70	97	134
19,361	8,113	609	1,028	2,225	209	508	355	342	455	535	138	105	179	112
15,523	5,447	206	724	1,736	66	347	147	225	291	503	90	77	106	139
12,523	4,219	69	396	1,235	35	373	165	162	345	465	80	53	130	127
17,982	6,509	266	739	2,299	116	414	266	252	287	460	78	67	100	95
13,839	4,742	59	466	1,770	77	335	161	233	329	513	89	74	67	110
14,068	4,825	61	473	1,537	12	332	135	295	223	467	75	55	83	132
21,569	7,719	380	929	2,112	99	745	207	383	442	548	102	77	95	149
25,353	9,376	1,590	1,417	2,061	150	529	465	411	410	485	200	141	155	116
22,715	7,900	567	1,468	1,926	93	449	227	357	432	657	119	112	164	139
16,380	5,383	397	824	1,448	94	275	133	272	377	469	92	80	128	108
15,314	6,014	487	871	1,284	238	600	230	284	334	438	101	71	157	125
18,943	6,551	200	832	1,762	252	442	211	215	309	433	81	83	129	99
18,535	6,775	247	1,111	1,503	101	486	176	240	430	664	75	94	104	117
15,769	5,776	209	782	1,489	18	510	120	238	270	360	74	58	88	99
16,824	6,011	310	694	1,665	113	377	210	338	449	442	95	59	325	184
15,704	6,206	501	894	1,145	138	521	321	389	280	313	109	63	115	129

(*e*) In this district is situated an Infirmary (containing 25 patients on 8th April 1861), in which the deaths of 33 persons were registered in 1861; and the Manchester Royal Lunatic Asylum (containing 77 patients), in which 5 deaths were registered.

(*f*) In this district is situated Chester Infirmary (containing 48 patients on 8th April 1861), in which 43 deaths were registered in 1861; also the Chester County Lunatic Asylum (containing 323 patients), in which 42 deaths were registered.

(*g*) The Wirrall Union Hospital is situated in this district (containing 22 patients on 8th April 1861), in which 23 deaths were registered in 1861.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			VIII. NORTH WESTERN COUNTIES—*cont*[d].					
			34. Lancashire.					
258,236	269,742	461	Liverpool (*a*) - - - - H. H.	3,330	137	291	151	5
153,279	225,845	462	West Derby - - - - -	2,273	86	146	140	9
56,074	73,127	463	Prescot (*b*) - - - - L.	2,362	100	143	137	9
38,307	46,252	464	Ormskirk - - - - -	1,925	75	105	81	7
77,539	94,561	465	Wigan - - - - - -	2,681	128	232	110	4
36,164	43,875	466	Warrington (*c*) - - - L.	2,394	78	142	107	6
32,734	37,700	467	Leigh - - - - - -	2,514	84	75	117	3
114,712	130,269	468	Bolton - - - - - -	2,688	106	153	187	2
88,815	101,135	469	Bury - - - - - -	2,315	86	125	95	4
31,585	39,038	470	Barton-upon-Irwell - - - -	2,188	74	112	106	4
123,841	169,579	471	Chorlton - - - - - -	2,394	85	174	143	7
87,523	105,335	472	Salford - - - - - -	2,600	83	253	172	4
228,433	243,988	473	Manchester (*d*) - - - H. L.	3,148	124	241	150	4
119,199	134,753	474	Ashton-under-Lyne - - - *-	2,666	88	150	142	4
86,788	111,276	475	Oldham - - - - - -	2,538	90	129	125	3
72,515	91,754	476	Rochdale - - - - - -	2,370	85	116	95	5
50,424	69,781	477	Haslingden - - - - - -	2,244	85	96	101	20
63,868	75,595	478	Burnley - - - - - -	2,364	98	66	141	3
22,368	20,476	479	Clitheroe - - - - - -	2,089	71	24	137	3
90,738	119,942	480	Blackburn - - - - - -	2,634	158	127	137	7
37,701	41,678	481	Chorley - - - - - -	2,160	77	49	101	4
96,545	110,523	482	Preston - - - - - -	2,717	108	202	133	3
22,002	25,682	483	Fylde - - - - - -	1,887	57	47	104	7
12,695	12,425	484	Garstang - - - - - -	1,786	66	46	125	–
34,660	35,297	485	Lancaster (*e*) - - - - L.	2,280	82	57	140	4
30,556	35,738	486	Ulverstone - - - - - -	2,004	69	48	106	14
			IX. YORKSHIRE:					
			35. West Riding.					
4,574	4,391	487	Sedbergh - - - - - -	1,925	78	33	42	27
13,762	12,528	488	Settle - - - - - - -	1,976	72	21	122	3
28,766	28,761	489	Skipton - - - - - - -	2,125	57	35	137	3
9,334	9,534	490	Pateley Bridge* - - - -	2,052	70	30	80	7
16,041	15,742	491	Ripon* - - - - - -	1,962	54	51	56	–
12,167	11,534	492[a]	Great Ouseburn* - - - -	1,822	47	67	95	20
15,473	17,176	492[b]	Knaresborough* - - - -	2,149	58	70	76	8
5,129	5,123	492[c]	Wetherby* - - - - -	1,774	57	39	45	9
28,541	29,513	493	Otley* - - - - - -	2,169	77	50	108	7
45,903	45,704	494	Keighley - - - - -	2,329	100	57	132	5
29,727	31,113	495	Todmorden - - - - -	2,012	90	87	52	–
17,799	18,631	496	Saddleworth - - - - -	2,389	83	76	119	5
123,860	131,336	497	Huddersfield (*f*) - - - H.	2,196	89	87	121	6
120,958	128,673	498	Halifax (*g*) - - - - H.	2,355	70	77	123	2
181,964	196,475	499	Bradford (*h*) - - - - H.	2,569	98	155	138	4
88,679	109,958	500	Hunslet - - - - - -	2,403	90	157	108	10

* Corrections have been made for changes which occurred in the limits of these districts between 1851 and 1860.

(*a*) In this district is situated the Northern Hospital (containing 101 patients on 8th April 1861), in which 130 deaths were registered in 1861; also the Royal Infirmary (containing 166 patients), 138 deaths were registered.

(*b*) Lancaster County Lunatic Asylum is situated in this district (containing 412 patients on 8th April 1861), in which 90 deaths were registered in 1861.

(*c*) Haydock Lodge Lunatic Asylum is situated in this district (containing 130 patients on 8th April 1861), in which 16 deaths were registered in 1861.

(*d*) In this district is situated the Royal Infirmary (containing 202 patients on 8th April 1861), in which 264 deaths were registered in 1861; also the Lancaster County Lunatic Asylum (containing 509 patients), in which 68 deaths were registered.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain, (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
27,703	13,201	1,626	2,483	2,334	186	870	701	821	541	514	299	216	204	131
17,649	7,856	782	1,309	1,517	87	679	374	477	410	397	119	93	154	131
17,470	7,240	630	1,424	1,647	111	591	340	272	329	373	119	96	263	182
15,478	5,427	471	639	1,212	82	377	212	215	309	370	95	72	117	114
21,780	9,021	1,152	1,341	1,788	150	482	524	391	315	456	118	101	103	111
19,146	7,604	711	1,037	2,081	152	530	327	391	356	399	130	110	261	194
21,275	8,261	373	1,072	2,220	337	579	394	294	369	534	97	109	127	106
23,411	9,493	819	1,187	2,281	87	870	403	481	387	454	182	124	120	125
21,180	7,872	653	1,124	1,959	88	479	336	317	382	504	120	97	105	105
18,449	6,871	630	916	1,462	110	522	269	207	383	473	96	79	108	98
21,133	8,856	1,091	1,403	1,645	63	724	336	584	433	411	159	140	161	144
22,386	9,756	1,562	1,443	1,974	106	863	428	639	378	377	233	188	165	137
26,125	11,724	1,580	1,763	2,280	116	825	477	709	526	496	264	216	254	178
24,713	9,839	927	1,216	2,570	80	755	495	460	440	543	169	129	124	118
23,372	9,143	686	1,176	2,243	108	642	350	350	373	479	151	96	145	125
19,937	8,107	660	1,059	1,978	138	490	478	381	428	455	152	103	116	114
19,107	7,472	512	1,179	1,752	44	475	341	339	314	430	119	103	169	157
21,117	7,784	310	935	1,940	144	714	344	343	349	533	107	89	114	106
14,528	5,207	91	627	1,120	4	613	261	257	321	520	96	92	120	108
22,560	9,122	654	1,445	1,694	100	601	459	373	378	520	123	114	138	126
17,332	6,392	202	547	1,329	113	457	297	286	352	490	101	84	86	98
24,440	9,753	1,186	1,492	1,911	80	665	663	450	464	534	197	168	164	109
13,157	4,819	184	543	962	29	463	114	219	342	405	55	51	191	184
10,792	3,838	175	350	590	18	479	99	158	366	484	54	42	48	89
12,987	5,433	184	647	1,062	76	662	270	355	431	563	121	80	498	264
11,816	4,595	205	630	892	75	362	113	281	353	474	81	53	112	118
9,636	3,261	100	616	716	–	100	50	183	392	516	73	45	146	45
11,341	4,031	56	369	1,535	–	463	173	156	348	521	79	60	125	103
16,711	5,577	96	371	1,528	31	649	213	259	398	568	103	94	109	120
16,196	4,862	125	142	1,546	25	359	109	226	358	575	110	60	33	124
15,055	4,858	213	550	1,722	14	289	166	109	305	479	76	52	155	69
12,394	3,959	251	371	1,082	20	421	60	160	302	321	69	42	257	179
18,116	5,524	321	708	1,733	89	364	116	205	304	361	128	87	199	127
14,051	4,340	146	536	1,609	24	171	219	195	252	321	69	107	180	60
18,806	5,750	154	365	2,180	73	472	206	305	415	548	81	52	171	115
21,294	7,627	212	644	2,202	207	665	395	400	475	645	95	71	88	85
16,813	5,716	336	621	1,149	10	254	208	310	336	334	152	112	81	147
19,641	7,214	352	1,090	2,159	102	577	178	246	393	591	119	124	114	123
18,291	6,758	361	925	1,738	76	521	276	340	373	479	94	68	110	99
20,593	7,776	304	932	2,678	85	612	329	304	380	493	134	98	122	127
25,034	9,788	822	1,345	2,907	88	697	490	436	386	508	117	101	137	108
21,072	8,552	868	1,332	2,238	81	527	463	379	373	415	123	85	126	101

(*e*) Lancaster Moor County Lunatic Asylum is situated in this district (containing 734 patients on 8th April 1861), in which 64 deaths were registered in 1861.

(*f*) In this district is situated an Infirmary (containing 52 patients on 8th April 1861), in which the deaths of 29 persons were registered in 1861.

(*g*) An Infirmary is situated in this district (containing 23 patients on 8th April 1861), in which 15 deaths were registered in 1861.

(*h*) An Infirmary is situated in this district (containing 38 patients on 8th April 1861), in which 44 deaths were registered in 1861.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			IX. YORKSHIRE—*continued.*					
			35. West Riding—*continued.*					
101,343	117,566	501	Leeds (*a*) - - - - H. H.	2,772	109	226	97	5
71,768	92,883	502	Dewsbury - - - - -	2,472	75	104	139	10
48,956	53,021	503	Wakefield (*b*) - - - - - L.	2,446	65	128	116	10
29,937	34,794	504 *a*	Pontefract - - - - -	2,221	92	99	98	18
8,158	7,793	504 *b*	Hemsworth - - - - -	1,620	41	33	44	15
34,980	45,797	505	Barnsley - - - - - -	2,405	75	107	129	11
32,012	38,511	506	Wortley - - - - - -	2,093	69	53	100	19
37,914	63,618	507	Ecclesall Bierlow - - - -	2,275	98	139	114	19
103,626	128,951	508	Sheffield (*c*) - - - - H.	2,845	133	220	125	21
33,082	44,350	509	Rotherham - - - - -	2,165	89	105	108	27
34,675	39,388	510	Doncaster - - - - -	2,154	106	87	87	20
15,886	16,011	511	Thorne - - - - - -	2,184	73	92	95	50
13,686	15,153	512	Goole - - - - - -	2,119	71	213	78	39
15,672	16,001	513	Selby - - - - - -	2,130	80	158	71	12
19,710	19,919	514	Tadcaster - - - - -	1,882	58	33	92	19
			36. East Riding (with York).					
54,324	59,968	515	York* (*d*) - - - H. L. L. L.	2,360	84	136	72	18
16,098	16,710	516	Pocklington - - - - -	1,932	56	56	69	21
14,436	15,001	517	Howden - - - - - -	2,257	118	91	69	80
20,040	21,029	518	Beverley - - - - - -	1,891	60	92	44	15
44,719	51,956	519	Sculcoates - - - - -	2,227	92	168	74	10
50,670	56,888	520	Hull (*e*) - - - - H. L.	2,469	123	150	89	10
9,407	9,681	521	Patrington - - - - -	1,997	81	76	69	21
9,279	9,654	522	Skirlaugh - - - - -	1,887	89	93	65	18
18,265	19,226	523	Driffield - - - - - -	1,971	74	61	51	33
14,322	14,371	524	Bridlington - - - - -	2,032	66	61	84	29
			37. North Riding.					
24,615	30,425	525	Scarborough - - - - -	2,084	72	81	41	28
23,128	23,483	526	Malton - - - - - -	1,930	79	115	71	37
10,211	10,148	527	Easingwold* - - - - -	1,777	77	68	66	11
12,760	12,299	528	Thirsk - - - - - -	1,849	62	35	37	30
11,734	11,832	529	Helmsley* - - - - -	1,876	47	70	83	24
9,978	10,549	530	Pickering - - - - -	1,857	29	42	46	9
21,592	23,633	531	Whitby - - - - - -	2,043	82	83	53	23
12,202	22,128	532	Guisbrough - - - - -	2,011	83	82	93	33
9,387	10,381	533	Stokesley* - - - - -	1,952	70	57	64	44
12,460	12,174	534	Northallerton - - - - -	1,894	67	51	37	34
8,980	8,650	535	Bedale - - - - - -	1,801	50	25	18	20
10,057	10,105	536	Leyburn - - - - - -	1,654	46	20	20	5
5,635	5,649	537	Asrigg - - - - - -	1,990	53	32	37	19
6,820	6,196	538	Reeth - - - - - -	2,022	38	41	32	6
13,846	13,457	539	Richmond - - - - -	1,899	49	58	40	23

* Corrections have been made for changes which occurred in the limits of these districts between 1851 and 1860.

(*a*) In this district is situated the House of Recovery, or Fever Hospital (containing 7 patients on 8th April 1861), in which 28 deaths were registered in 1861; also the General Infirmary (containing 146 patients), in which 124 deaths were registered.

(*b*) The West Riding Pauper Lunatic Asylum is situated in this district (containing 952 patients on 8th April 1861), in which 166 deaths were registered in 1861.

(*c*) Sheffield General Infirmary is situated in this district (containing 144 patients on 8th April 1861), in which 125 deaths were registered in 1861.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
23,932	10,271	1,307	1,732	2,653	135	521	490	530	414	370	241	170	175	139
20,303	8,511	452	1,053	2,455	222	596	424	316	362	448	114	76	101	128
17,553	6,733	492	1,007	1,785	91	548	258	266	367	482	137	103	475	316
18,049	6,487	311	599	1,866	123	430	259	253	288	373	77	89	133	145
11,829	3,649	80	568	1,077	80	179	70	140	330	359	73	35	41	148
21,256	8,000	568	1,202	2,184	115	608	446	408	324	439	95	61	73	99
16,195	5,831	209	918	1,770	82	415	135	211	344	460	93	79	122	117
18,420	7,327	737	1,214	1,686	133	515	247	365	441	349	160	96	139	133
22,600	10,025	1,155	1,590	2,178	332	607	414	499	453	414	193	118	154	142
17,384	6,471	498	973	1,402	175	500	241	242	281	389	97	63	130	74
18,142	6,450	439	753	1,920	110	439	269	206	281	400	87	66	94	109
20,744	6,450	323	500	1,435	29	500	147	225	287	437	52	46	132	70
21,815	7,074	1,083	807	1,461	66	409	215	250	282	318	68	69	98	75
19,785	6,469	726	522	2,126	128	313	157	180	231	313	63	37	89	85
15,284	4,845	143	483	1,713	93	371	97	166	320	410	72	65	124	108
20,294	7,405	753	794	2,168	185	401	363	279	385	422	79	75	300	177
18,960	5,292	220	560	1,833	142	280	101	193	217	389	31	32	89	106
22,375	6,517	344	324	1,699	30	289	125	394	341	444	61	58	58	116
17,705	5,592	400	590	2,155	27	221	148	285	270	3[illegible]5	78	56	111	105
20,617	7,633	977	732	1,802	94	372	362	307	306	357	107	76	149	102
21,680	8,556	806	1,094	1,993	152	494	534	388	335	354	140	74	211	165
19,767	5,884	255	318	1,656	8	318	64	239	214	441	46	58	124	65
19,249	5,408	353	555	1,531	25	244	261	109	176	307	71	50	126	97
19,975	5,993	275	353	2,394	82	188	118	208	260	379	52	34	160	132
18,600	5,815	212	620	1,978	65	446	239	272	311	371	60	43	147	129
18,478	6,296	409	790	2,049	261	225	320	192	200	267	111	74	190	140
16,742	5,201	510	497	1,281	26	376	147	219	274	305	62	53	94	61
14,625	4,302	306	242	1,303	64	321	121	150	194	359	48	43	140	78
14,010	4,231	130	490	1,228	37	161	43	223	329	378	51	44	136	112
14,585	4,368	299	677	1,035	13	365	91	169	193	322	106	63	80	85
14,687	4,308	190	564	1,165	22	176	103	176	230	335	121	43	84	68
13,410	5,008	302	818	1,071	52	262	142	358	259	298	109	74	140	84
13,197	5,294	339	610	1,605	188	301	170	226	202	334	85	48	97	65
12,387	3,997	228	432	1,542	16	228	106	147	313	463	46	56	77	102
12,990	4,368	238	513	1,295	13	163	1 6	232	319	499	53	50	96	110
12,266	3,782	96	480	1,563	26	70	9	192	259	340	60	76	82	121
11,619	3,372	31	399	1,152	8	61	1 1	215	262	282	55	63	103	81
14,919	4,107	120	253	760	–	160	0	187	367	390	51	63	124	91
14,078	4,410	118	815	1,041	–	75	5	279	297	442	315	77	188	151
12,555	4,328	252	604	1,085	6	182	1	211	347	377	100	58	127	109

(*d*) In this district is situated the County Hospital (containing 58 patients on 8th April 1861), in which the deaths of 27 persons were registered in 1861; York Lunatic Asylum (containing 133 patients), in which 14 deaths were registered; the North and East Riding Pauper Lunatic Asylum (containing 486 patients), in which 42 deaths were registered; and the Friends' Retreat Lunatic Asylum (containing 120 patients), where 7 deaths were registered.

(*e*) In this district is situated an infirmary (containing 110 patients on 8th April 1861), in which 85 deaths were registered in 1861; also Hull Borough Asylum for Lunatics (containing 100 patients), in which 16 deaths were registered.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			X. NORTHERN COUNTIES:					
			38. Durham.					
21,618	26,122	540	Darlington - - - - -	2,005	78	88	66	19
36,866	57,099	541*a*	Stockton (*a*) - - - - L.	2,237	97	150	79	19
16,068	29,153	541*b*	Hartlepool - - - -					
30,083	50,491	542	Auckland - - - - -	2,345	85	113	137	13
19,813	20,880	543	Teesdale - - - - -	1,928	41	48	86	33
14,567	16,418	544	Weardale - - - - -	2,088	106	45	99	20
55,951	70,274	545	Durham (*b*) - - - - H.	2,257	109	81	136	10
21,795	27,293	546	Easington - - - - -	2,026	60	90	157	16
19,564	21,773	547	Houghton-le-Spring - - -	2,117	113	91	93	7
20,907	27,660	548	Chester-le-Street - - - -	2,073	93	51	140	5
70,576	90,704	549	Sunderland - - - - -	2,489	82	175	117	9
35,790	44,849	550	South Shields - - - - -	2,401	121	148	161	6
48,081	59,409	551	Gateshead (*c*) - - - - L.	2,582	97	212	134	5
			39. Northumberland.					
89,156	110,968	552	Newcastle-upon-Tyne (*d*) - H.	2,737	99	281	108	2
64,248	77,955	553	Tynemouth - - - - -	2,318	87	126	153	5
13,897	14,943	554	Castle Ward - - - - -	1,905	69	79	92	6
30,436	31,850	555	Hexham - - - - -	1,853	54	57	60	6
7,286	6,693	556	Haltwistle - - - - -	1,680	24	17	29	11
6,553	7,080	557	Bellingham - - - - -	1,421	53	40	32	6
18,127	24,003	558	Morpeth (*e*) - - - - L.	1,946	87	108	100	18
21,122	21,053	559	Alnwick - - - - -	1,857	67	51	60	19
6,871	6,260	560	Belford - - - - - -	1,633	65	47	90	3
24,093	21,862	561	Berwick-upon-Tweed - - -	1,909	75	63	120	1
14,348	13,211	562	Glendale - - - - -	1,509	60	30	108	10
7,431	7,147	563	Rothbury - - - - -	1,475	43	25	45	22
			40. Cumberland.					
6,816	6,404	564	Alston - - - - - -	1,989	51	35	30	3
22,307	22,322	565	Penrith - - - - - -	1,900	42	23	57	20
11,323	10,866	566	Brampton - - - - -	1,657	33	20	59	8
9,696	10,469	567	Longtown - - - - -	1,742	43	19	66	3
41,557	44,820	568	Carlisle (*f*) - - - - H.	2,313	64	99	123	4
23,661	23,273	569	Wigton - - - - - -	1,857	43	46	61	5
38,510	41,292	570	Cockermouth - - - - -	2,219	81	94	136	2
35,614	39,950	571	Whitehaven - - - - -	2,264	63	93	113	3
6,008	5,880	572	Bootle - - - - - -	1,629	20	12	37	32
			41. Westmorland.					
13,660	15,411	573	East Ward - - - - -	1,756	43	25	67	22
8,155	8,072	574	West Ward - - - - -	1,829	32	20	33	36
36,572	37,463	575	Kendal - - - - - -	1,855	58	24	73	4

(*a*) In this district is situated Durham County Lunatic Asylum (containing on 8th April 1861, 302 patients), in which 26 deaths were registered in 1861.

(*b*) The County Hospital is situated in this District (containing on 8th April 1861, 36 patients), in which 7 deaths were registered in 1861.

(*c*) In this district is situated Dunston Lodge Lunatic Asylum (containing 164 patients on the 8th April 1861), in which 10 deaths were registered in 1861.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
14,675	5,438	408	757	1,617	119	267	195	298	394	458	52	57	122	82
18,984	7,360	570	1,115	1,669	181	362	299	268	263	377	75	64	136	117
19,228	7,417	355	1,207	1,519	128	601	326	358	294	493	59	72	74	94
13,313	4,682	145	578	1,029	29	364	124	167	347	395	136	67	82	77
16,077	5,499	168	762	822	17	417	112	215	371	497	165	94	79	104
19,626	7,471	312	841	1,683	152	624	272	264	285	409	66	47	106	127
17,898	6,961	425	706	1,371	118	678	376	240	171	312	46	34	111	80
17,251	6,370	366	838	1,577	51	450	225	125	239	374	64	53	90	102
16,712	6,291	203	781	1,405	224	640	178	122	274	384	39	45	101	78
20,823	8,491	602	1,322	1,516	199	603	343	532	296	337	89	68	161	124
18,172	7,584	587	1,011	1,049	104	737	311	582	306	325	82	82	146	132
18,901	7,811	579	1,076	1,484	141	614	317	260	329	405	100	67	293	199
21,296	9,114	884	1,318	1,909	200	563	373	529	442	388	118	103	184	131
17,416	7,326	509	1,058	1,313	115	750	256	318	274	340	61	63	158	133
14,029	4,899	294	512	975	44	501	147	147	296	403	73	48	49	114
13,121	4,198	195	732	608	33	278	62	197	376	404	111	60	110	142
11,774	3,516	42	242	200	–	158	53	179	328	528	56	29	83	97
7,320	2,326	84	264	276	–	132	12	96	319	348	31	17	53	78
14,690	5,251	456	979	822	70	453	143	261	248	390	50	39	155	114
11,266	3,921	199	562	638	33	326	109	120	320	372	80	50	100	116
10,065	3,563	58	152	421	–	479	70	93	241	269	33	34	121	91
12,291	4,701	168	440	499	180	567	94	243	352	275	69	37	134	122
9,162	3,220	55	192	312	16	537	44	159	257	248	51	31	88	101
7,047	2,497	11	194	431	11	183	11	108	230	276	32	15	28	42
13,749	4,168	64	672	469	–	96	245	288	395	498	328	102	116	155
13,125	4,327	108	559	537	58	260	144	188	354	472	83	61	144	157
11,696	3,648	49	250	277	76	236	153	243	361	439	32	39	127	38
14,347	4,291	46	254	439	46	293	146	193	301	331	29	54	98	44
18,663	7,040	505	717	1,071	151	606	216	350	438	454	78	65	137	119
14,292	4,229	184	290	341	85	205	140	201	312	356	59	40	101	88
16,023	6,041	372	518	777	59	591	249	258	354	448	64	47	159	122
15,932	6,849	450	1,052	839	97	539	401	329	314	374	96	64	159	86
8,891	2,995	27	227	187	13	67	53	80	284	533	54	48	107	74
11,470	3,515	39	342	673	28	258	73	123	264	435	47	38	116	79
10,287	3,442	48	326	441	29	105	86	201	411	503	61	40	107	129
10,111	3,915	69	442	1,113	33	311	210	179	432	447	90	61	120	119

(*d*) In this district is situated an infirmary (containing 171 patients on 8th April 1861), in which 140 deaths were registered in 1861.

(*e*) Northumberland County Lunatic Asylum is situated in this district (containing 179 patients on 8th April 1861), in which the deaths of 11 persons were registered in 1861.

(*f*) Cumberland Infirmary is situated in this district (containing 44 patients on 8th April 1861), in which 25 deaths were registered in 1861.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			XI. MONMOUTHSHIRE AND WALES.					
			42. Monmouthshire.					
19,057	17,941	576	Chepstow - - - - -	1,964	72	21	89	43
27,379	30,244	577	Monmouth - - - - -	1,907	70	34	96	7
59,229	67,092	578	Abergavenny (*a*) - - - L.	2,519	166	78	115	10
27,993	30,288	579	Pontypool - - - - -	2,305	126	48	119	7
43,472	51,412	580	Newport (*b*) - - - - H.	2,220	99	67	75	8
			43. South Wales.					
			Glamorganshire.					
46,491	74,575	581	Cardiff (*c*) - - - - H.	2,329	101	107	71	10
76,804	107,105	582	Merthyr Tydfil - - - -	2,861	182	164	105	9
23,422	26,465	583	Bridgend - - - - -	1,967	124	33	39	13
46,471	58,533	584	Neath (*d*) - - - - L.	2,159	178	68	83	8
38,420	51,260	585 *a*	Swansea (*e*) - - - - H.	2,023	94	52	82	7
8,487	8,316	585 *b*	Gower - - - - - -					
			Carmarthenshire.					
23,507	27,979	586	Llanelly - - - - -	1,968	118	33	63	1
15,055	14,775	587	Llandovery - - - - -	1,828	62	7	41	3
17,968	17,222	588	Llandilofawr - - - - -	1,913	97	11	53	4
38,142	36,675	589	Carmarthen (*f*) - - - H.	2,121	91	19	96	7
			Pembrokeshire.					
22,130	21,344	590	Narberth - - - - -	1,890	81	10	103	41
22,960	29,003	591	Pembroke - - - - -	1,941	99	37	92	3
39,382	37,343	592	Haverfordwest - - - -	2,114	98	45	109	25
			Cardiganshire.					
20,186	18,585	593	Cardigan - - - - -	1,945	67	8	94	19
20,173	19,081	594	Newcastle-in-Emlyn - - -	1,822	81	6	74	37
9,874	9,994	595	Lampeter - - - - -	1,788	135	2	37	17
13,224	13,540	596	Aberayron - - - - -	1,975	79	5	86	33
22,753	25,464	597	Aberystwith - - - - -	1,909	93	7	85	2
10,404	10,737	598	Tregaron - - - - -	1,804	109	12	79	3
			Brecknockshire.					
8,345	8,305	599	Builth - - - - - -	1,848	59	12	120	7
18,174	17,279	600	Brecknock - - - - -	2,126	87	82	62	7
21,697	22,457	601	Crickhowell - - - - -	2,505	144	44	122	19
10,962	10,819	602	Hay - - - - - -	2,182	69	39	94	21

(*a*) In this district is situated the Lunatic Asylum for the counties of Monmouth, Brecon, Hereford, and Radnor (containing 403 patients on 8th April 1861), in which the deaths of 48 persons were registered in 1861.

(*b*) In this district is situated a Hospital (containing 23 patients on 8th April 1861), in which 13 deaths were registered in 1861.

(*c*) In this district is situated an Infirmary (containing 23 patients on 8th April 1861), in which 17 deaths were registered in 1861.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
12,547	4,580	70	418	1,191	25	356	82	266	321	354	98	63	138	66
13,415	4,677	116	1,004	1,246	26	394	111	149	241	343	137	90	101	46
20,579	8,406	357	1,482	2,148	227	580	366	284	310	444	142	98	160	135
16,814	6,922	202	1,130	1,747	135	581	306	492	345	465	155	110	107	84
18,183	6,952	339	1,217	2,035	209	350	253	363	316	448	146	92	113	87
18,960	7,641	382	1,178	1,996	347	350	335	388	350	455	149	92	110	57
22,974	9,985	597	1,206	3,021	572	520	401	279	437	550	126	84	77	93
15,065	5,496	59	493	2,086	59	190	249	220	349	381	114	39	177	51
15,412	6,552	264	589	1,950	226	418	290	283	389	473	104	66	78	51
13,506	5,809	223	935	1,594	210	448	225	332	405	423	148	115	142	93
12,133	5,043	105	342	930	86	306	180	222	413	447	81	45	100	60
11,587	3,696	–	69	1,723	48	197	21	128	650	423	77	68	37	107
11,262	3,713	18	181	1,130	31	230	31	132	482	460	75	32	101	54
14,062	5,070	28	218	1,587	244	451	121	237	659	443	68	39	72	72
10,237	3,755	24	34	487	102	422	27	187	479	475	53	25	92	32
15,477	5,356	116	219	1,091	166	400	139	214	386	403	76	27	93	91
14,163	5,120	138	246	843	136	492	58	207	527	415	63	34	71	65
10,660	3,620	4	106	1,221	53	406	75	115	724	450	82	24	92	93
7,923	3,283	4	73	579	13	291	39	86	613	446	80	31	29	56
9,390	3,313	8	39	600	86	117	55	273	649	454	78	23	35	59
10,147	4,012	–	76	545	82	299	65	240	675	489	119	82	45	40
10,032	4,194	9	111	899	182	392	124	300	447	396	59	34	55	63
9,033	3,338	–	77	476	77	294	84	203	610	405	95	42	75	29
12,212	3,822	–	128	605	28	440	64	211	361	379	44	62	27	94
15,138	5,280	237	517	1,388	73	314	280	251	382	390	106	73	100	117
22,757	8,599	174	1,401	2,932	174	563	241	379	311	499	105	83	126	116
15,416	4,864	116	356	1,152	39	356	46	317	307	338	159	107	109	99

(*d*) In this district is situated the Lunatic Asylum for the counties of Glamorgan, Carmarthen, Cardigan, and Pembroke (containing 229 patients on 8th April 1861), in which 23 deaths were registered in 1861.

(*e*) An Infirmary is situated in this district (containing 30 patients on 8th April 1861), in which 8 deaths were registered in 1861.

(*f*) An Infirmary is situated in this district (containing 18 persons on 8th April 1861), in which 8 deaths were registered in 1861.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			XI. MONMOUTHSHIRE AND WALES—*cont^d.*					
			43. South Wales—*continued.*					
			Radnorshire.					
15,149	15,671	603	Presteigne - - - - -	1,893	59	8	30	29
9,480	10,379	604	Knighton - - - -	1,632	42	12	30	15
6,796	6,816	605	Rhayader - - - - -	1,782	75	25	44	6
			44. North Wales.					
			Montgomeryshire.					
12,116	12,395	606	Machynlleth - - - - -	2,064	121	20	65	2
25,107	23,732	607	Newtown - - - - -	2,110	50	54	53	3
17,984	19,097	608	Montgomery* - - - -	1,948	60	26	28	20
21,935	21,699	609	Llanfyllin* - - - - -	1,932	67	11	57	8
			Flintshire.					
41,047	39,941	610	Holywell - - - - -	2,075	70	21	128	4
			Denbighshire.					
40,078	47,975	611	Wrexham* - - - - -	2,214	105	49	105	6
16,853	16,083	612	Ruthin - - - - - -	1,938	83	8	64	8
25,288	27,518	613	St. Asaph (*a*) - - - - L.	2,105	84	16	112	7
12,479	12,770	614	Llanrwst - - - - -	1,886	110	9	105	2
			Merionethshire.					
15,418	16,107	615	Corwen - - - - - -	1,804	65	11	98	9
6,736	6,352	616	Bala - - - - - -	1,800	67	29	21	9
12,971	12,482	617	Dolgelly - - - - -	1,848	127	12	41	1
16,182	18,289	618	Festiniog - - - - -	1,934	78	20	125	4
			Carnarvonshire.					
21,788	20,908	619	Pwllheli - - - - - -	1,842	67	17	90	10
30,446	32,425	620	Carnarvon - - - - -	2,208	65	33	113	3
34,321	36,309	621	Bangor* - - - - -	2,050	86	21	60	3
11,630	13,896	622	Conway - - - - - -	1,838	62	6	126	5
			Anglesea.					
39,732	38,157	623	Anglesea* - - - - -	1,933	55	17	59	1

* Corrections have been made for changes which occurred in the limits of these districts, between 1851 and 1860.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
12,547	4,580	70	418	1,191	25	356	82	266	321	354	98	63	138	66
13,415	4,677	116	1,004	1,246	26	394	111	149	241	343	137	90	101	46
20,579	8,406	357	1,482	2,148	227	580	366	284	310	444	142	98	160	135
16,814	6,922	202	1,130	1,747	135	581	306	492	345	465	155	110	107	84
18,188	6,952	339	1,217	2,035	209	350	253	363	316	448	146	92	113	87
18,960	7,641	382	1,178	1,996	347	350	335	388	350	455	149	92	110	57
22,974	9,985	597	1,206	3,021	572	520	401	279	437	550	126	84	77	93
15,065	5,496	59	493	2,086	59	190	249	220	349	381	114	39	177	51
15,412	6,552	264	589	1,950	226	418	290	283	389	473	104	66	78	51
13,506	5,809	223	935	1,594	210	448	225	332	405	423	148	115	142	93
12,133	5,043	105	342	930	86	306	180	222	413	447	81	45	100	60
11,587	3,696	–	69	1,723	48	197	21	128	650	423	77	68	37	107
11,262	3,713	18	181	1,130	31	230	31	132	482	460	75	32	101	54
14,062	5,070	28	218	1,587	244	451	121	237	659	443	68	39	72	72
10,237	3,755	24	34	487	102	422	27	187	479	475	53	25	92	32
15,477	5,356	116	219	1,091	166	400	139	214	386	403	76	27	93	91
14,163	5,120	138	246	843	136	492	58	207	527	415	63	34	71	65
10,660	3,620	4	106	1,221	53	406	75	115	724	450	82	34	92	93
7,923	3,283	4	73	579	13	291	39	86	613	446	80	31	29	56
9,390	3,313	8	39	600	86	117	55	273	649	454	78	23	35	59
10,147	4,012	–	76	545	82	299	65	240	675	489	119	82	45	40
10,032	4,194	9	111	899	182	392	124	300	447	396	59	34	55	63
9,033	3,338	–	77	476	77	294	84	203	610	405	95	42	75	29
12,212	3,822	–	128	605	28	440	64	211	361	379	44	62	27	94
15,138	5,280	237	517	1,388	73	314	280	251	382	390	106	73	100	117
22,757	8,599	174	1,401	2,932	174	563	241	379	311	499	105	83	126	116
15,416	4,864	116	356	1,152	39	356	46	317	307	338	159	107	109	99

(*d*) In this district is situated the Lunatic Asylum for the counties of Glamorgan, Carmarthen, Cardigan, and Pembroke (containing 229 patients on 8th April 1861), in which 23 deaths were registered in 1861.

(*e*) An Infirmary is situated in this district (containing 30 patients on 8th April 1861), in which 8 deaths were registered in 1861.

(*f*) An Infirmary is situated in this district (containing 18 persons on 8th April 1861), in which 8 deaths were registered in 1861.

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS At all Ages.				
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.
			XI. MONMOUTHSHIRE AND WALES—*cont^d.*					
			43. South Wales—*continued.*					
			Radnorshire.					
15,149	15,671	603	Presteigne	1,893	59	8	30	29
9,480	10,379	604	Knighton	1,632	42	12	30	15
6,796	6,816	605	Rhayader	1,782	75	25	44	6
			44. North Wales.					
			Montgomeryshire.					
12,116	12,395	606	Machynlleth	2,064	121	20	65	2
25,107	23,732	607	Newtown	2,110	50	54	53	3
17,984	19,097	608	Montgomery*	1,948	60	26	28	20
21,935	21,699	609	Llanfyllin*	1,932	67	11	57	8
			Flintshire.					
41,047	39,941	610	Holywell	2,075	70	21	128	4
			Denbighshire.					
40,078	47,975	611	Wrexham*	2,214	105	49	105	6
16,853	16,083	612	Ruthin	1,938	83	8	64	8
25,288	27,518	613	St. Asaph (*a*)	2,105	84	16	112	7
12,479	12,770	614	Llanrwst	1,886	110	9	105	2
			Merionethshire.					
15,418	16,107	615	Corwen	1,804	65	11	98	9
6,736	6,352	616	Bala	1,800	67	29	21	9
12,971	12,482	617	Dolgelly	1,848	127	12	41	1
16,182	18,289	618	Festiniog	1,934	78	20	125	4
			Carnarvonshire.					
21,788	20,908	619	Pwllheli	1,842	67	17	90	10
30,446	32,425	620	Carnarvon	2,208	65	33	113	3
34,321	36,309	621	Bangor*	2,050	86	21	60	3
11,630	13,896	622	Conway	1,838	62	6	126	5
			Anglesea.					
39,732	38,157	623	Anglesea*	1,933	55	17	59	1

* Corrections have been made for changes which occurred in the limits of these districts, between 1851 and 1860.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus.	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain, (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
13,037	3,982	46	536	1,113	–	87	92	214	316	385	95	85	202	88
11,455	3,701	21	422	344	21	79	72	236	232	356	85	43	–	60
12,572	3,990	10	224	469	20	214	122	388	324	351	66	50	16	49
11,587	4,088	14	104	1,471	41	290	242	290	469	494	59	44	76	156
13,711	4,914	134	492	1,485	36	221	179	345	455	564	114	100	141	106
14,714	4,684	52	448	1,639	32	120	128	208	412	436	105	64	121	68
10,591	3,806	24	264	1,414	8	232	16	192	435	482	71	58	53	94
14,372	5,349	55	292	2,296	87	574	147	322	465	482	104	54	59	73
19,249	6,433	153	666	2,986	42	488	198	222	327	424	125	90	86	100
11,567	3,916	15	120	2,162	60	259	125	194	397	470	40	29	119	81
13,627	4,946	9	249	2,572	83	523	160	240	419	423	137	138	240	185
12,708	4,074	6	69	2,122	13	370	163	201	406	403	35	22	135	72
10,049	3,659	20	210	1,220	93	380	83	283	460	439	79	41	77	66
9,971	3,053	14	163	1,343	14	54	68	122	302	277	107	42	62	109
10,275	3,079	7	46	802	7	150	65	287	421	387	62	24	122	81
14,414	4,519	13	85	2,067	43	504	111	261	320	458	83	39	65	42
10,907	3,657	28	31	2,167	51	346	67	118	433	362	70	32	60	75
18,621	6,323	55	296	3,433	256	490	154	321	457	572	82	62	67	103
17,093	5,500	64	366	2,715	122	276	281	327	493	565	81	74	107	106
13,267	4,610	25	141	2,465	43	529	135	258	433	432	53	30	72	47
13,192	4,501	20	60	2,665	86	266	190	400	529	500	44	33	100	71

(*a*) North Wales Counties Lunatic Asylum is situated in this district (containing 227 patients on 8th April 1861), in which 22 deaths were registered in 1861.

DEATHS.

RETURN of the AVERAGE ANNUAL PROPORTION of DEATHS from specified Causes, at specified Ages, in *England* generally, and in each Registration Division and Registration District of *England*, during the Decennial Period 1851–60.

(*Mr. Lowe.*)

Ordered, by The House of Commons, *to be Printed,*
5 *February* 1864.

12.

Under 8 *oz.*

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 1 Year of Age.	At less than 5 Years of Age.								At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus.	
All Causes.	All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain, (including Hydrocephalus).	Small Pox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
13,037	3,982	46	536	1,113	–	87	92	214	316	385	95	85	202	88
11,455	3,701	21	422	344	21	79	72	236	232	356	85	43	–	60
12,572	3,990	10	224	469	20	214	122	388	324	351	66	50	16	49
11,587	4,088	14	104	1,471	41	290	242	290	469	494	59	44	76	156
13,711	4,914	134	492	1,485	36	221	179	345	455	564	114	100	141	106
14,714	4,684	52	448	1,639	32	120	128	208	412	436	105	64	121	68
10,591	3,806	24	264	1,414	8	232	16	192	435	482	71	58	53	94
14,372	5,349	55	292	2,296	87	574	147	322	465	482	104	54	59	73
19,249	6,433	153	666	2,986	42	488	198	222	327	424	125	90	86	100
11,567	3,916	15	120	2,162	60	259	125	194	397	470	40	29	119	81
13,627	4,946	9	249	2,572	83	523	160	240	419	423	137	138	240	185
12,708	4,074	6	69	2,122	13	370	163	201	406	403	35	22	135	72
10,049	3,659	20	210	1,220	93	380	83	283	460	439	79	41	77	66
9,971	3,053	14	163	1,343	14	54	68	122	302	277	107	42	62	109
10,275	3,079	7	46	802	7	150	65	287	421	387	62	24	122	81
14,414	4,519	13	85	2,067	43	504	111	261	320	458	83	39	65	42
10,907	3,657	28	31	2,167	51	346	67	118	433	362	70	32	60	75
18,621	6,323	55	296	3,433	256	490	154	321	457	572	82	62	67	103
17,093	5,500	64	366	2,715	122	276	281	327	493	565	81	74	107	106
13,267	4,610	25	141	2,465	43	529	135	258	433	432	53	30	72	47
13,192	4,501	20	60	2,665	86	266	190	400	529	500	44	33	100	71

(a) North Wales Counties Lunatic Asylum is situated in this district (containing 227 patients on 8th April 1861), in which 22 deaths were registered in 1861.

DEATHS.

RETURN of the AVERAGE ANNUAL PROPORTION of DEATHS from specified Causes, at specified Ages, in *England* generally, and in each Registration Division and Registration District of *England*, during the Decennial Period 1851–60.

(*Mr. Lowe.*)

Ordered, by The House of Commons, *to be Printed,*
5 *February* 1864.

Under 8 *oz.*

21.h.17(n).

POPULATION AND DEATHS.

RETURN to an Order of the Honourable The House of Commons, dated 26 February 1864;—*for*,

A RETURN "(in continuation of Parliamentary Paper, No. 12, of the present Session) stating—

"1. In the same form as was used for the former Return, a Return of the POPULATION and DEATHS of the following Three Groups of Districts:

A. Haltwhistle, Bellingham, Belford, Glendale, Rothbury, Brampton, Longtown;

B. Epsom, Hambledon, Dorking, Reigate, Godstone, Bromley;

C. Isle of Wight, Lymington, New Forest, South Stoneham, Droxford, Alresford, Alton:"

"2. A TABULAR RETURN of the POPULATION in 1851 and 1861, and of the DEATH RATES, Male and Female, by Phthisis Pulmonalis, and of the DEATH RATES, Male and Female, by other Diseases of the Lungs, per 100,000 living, as follows:—In *England* and *Wales* generally;* in the above-described Three* GROUPS of DISTRICTS; in Berkhampstead,* Newport Pagnell,* Towcester,* Leighton Buzzard,* Melksham, Redruth, Penzance, Yeovil, Stroud, Wolstanton, Stoke-upon-Trent, Leek,* Wolverhampton, Bromsgrove, Birmingham, Aston, Coventry, Alcester, Hinckley, Leicester, Basford, Radford, Nottingham, Macclesfield*, Congleton,* Blackburn, Preston, Pateley Bridge, Bradford, Leeds, Sheffield, Reeth, Alston, Abergavenny, Merthyr Tydfil,—at Ages 25–45, 45–55, and 55–65; and also of the same DEATH RATES at the Ages 15-25, for the Eleven Districts and Groups which are here above marked with an Asterisk."

(*Mr. Lowe.*)

Ordered, by The House of Commons, *to be Printed*,
4 *March* 1864.

682222
TOMHS

RETURN (in continuation of Parliamentary Paper, No. 12, of the present Session) stating, in the same
of DISTRICTS, during the

POPULATION AT ALL AGES.		GROUPS of DISTRICTS.		DEATHS					
				At all Ages.					At less than 1 Year of Age.
1851.	1861.	No.	NAME.	All Causes.	Fever ("Typhus" of Registrar General).	Diarrhœa, Dysentery, and Cholera.	Scarlatina.	Diphtheria.	All Causes.
			GROUP A.						
		556	Haltwhistle - - - -						
		557	Bellingham - - - -						
		560	Belford - - - -						
63,508	61,726	562	Glendale - - - -	1,591	46	27	66	9	10,400
		563	Rothbury - - - -						
		566	Brampton - - - -						
		567	Longtown - - - -						
			GROUP B.						
		37	Epsom - - - -						
		42	Hambledon - - - -						
		43	Dorking - - - -						
84,779	98,880	44	Reigate - - - L.	1,669	60	57	46	16	11,166
		45	Godstone - - - -						
		49	Bromley - - - -						
			GROUP C.						
		99	Isle of Wight - - -						
		100	Lymington - - - -						
		104	New Forest - - - -						
122,016	136,417	106	South Stoneham - - -	1,721	81	52	59	8	11,590
		110	Droxford - - - -						
		113	Alresford - - - -						
		114	Alton - - - - -						

Note.—The letter L placed after the District of Reigate (44)

General Register Office, Somerset House,
3 March 1864.

Form as was used for the former Return, the POPULATION and DEATHS in the undermentioned GROUPS Decennial Period 1851–60.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

At less than 5 Years of Age.									At Ages between 15 and 55.				At Ages between 35 and 55.	
									Phthisis Pulmonalis.		Other Diseases of the Respiratory Organs.		Diseases of the Brain (including Hydrocephalus).	
All Causes.	Diarrhœa, Dysentery, and Cholera.	Diseases of the Respiratory Organs (excluding Phthisis).	Diseases of the Brain (including Hydrocephalus).	Teething.	Smallpox.	Scarlatina.	Measles.	Whooping Cough.	Males.	Females.	Males.	Females.	Males.	Females.
3,363	49	221	334	71	26	312	76	162	294	339	38	33	88	70
3,922	248	590	672	140	28	171	116	246	286	348	79	63	122	93
3,987	229	636	760	80	28	224	108	215	367	407	74	45	120	127

indicates the presence of the Earlswood Asylum for Idiots.

George Graham,
Registrar General.

2.—RETURN of the POPULATION in 1851 and 1861, and of the DEATH RATES, Male and Female, DISTRICTS and GROUPS of DISTRICTS,

POPULATION AT ALL AGES.		DISTRICTS.		DEATHS			
				Aged 15–25.			
				Males.		Females.	
1851.	1861.	No.	NAME.	Phthisis Pulmonalis.	Other Diseases of the Lungs.	Phthisis Pulmonalis.	Other Diseases of the Lungs.
12,527	13,204	147	Berkhampstead - - - -	210	9	503	75
23,109	24,855	153	Newport Pagnell - - - -	272	29	584	33
12,806	13,004	165	Towcester - - - - -	221	18	508	69
17,142	17,648	183	Leighton Buzzard - - -	250	59	525	29
18,815	17,233	257	Melksham - - - - -	–	–	–	–
53,628	57,173	310	Redruth - - - - -	–	–	–	–
53,517	54,554	311	Penzance - - - - -	–	–	–	–
28,463	28,189	319	Yeovil - - - - - -	229	51	368	41
37,386	36,448	338	Stroud - - - - -	–	–	–	–
41,916	54,356	370	Wolstanton - - - - -	–	–	–	–
57,942	71,308	371	Stoke-upon-Trent - - - H.	–	–	–	–
23,031	24,806	372	Leek - - - - - -	404	33	825	31
104,158	126,902	379	Wolverhampton - - - H.	–	–	–	–
24,822	26,207	392	Bromsgrove - - - -	–	–	–	–
173,951	212,621	394	Birmingham - - H. H. L.	–	–	–	–
66,852	100,522	395	Aston - - - - - -	–	–	–	–
36,812	41,647	400	Coventry - - - - H.	–	–	–	–
17,482	16,878	405	Alcester - - - - -	–	–	–	–
16,558	16,374	412	Hinckley - - - - -	–	–	–	–
60,642	68,190	417	Leicester - - - - H. L.	–	–	–	–
64,023	73,285	438	Basford - -				
26,776	30,479	439	Radford - L. - - - -	–	–	–	–
58,419	75,765	440	Nottingham H.				
63,327	61,543	453	Macclesfield - - - -	550	43	840	50
30,512	34,328	457	Congleton - - - - -	539	27	746	44
90,738	119,942	480	Blackburn - - - - -	–	–	–	–
96,545	110,523	482	Preston - - - - -	–	–	–	–
9,334	9,534	490	Pateley Bridge - - - -	–	–	–	–
181,964	196,475	499	Bradford - - - - H.	–	–	–	–
101,343	117,566	501	Leeds - - - - - H. H.	–	–	–	–
103,626	128,951	508	Sheffield - - - - H.	–	–	–	–
6,820	6,196	538	Reeth - - - - - -	–	–	–	–
6,816	6,404	564	Alston - - - - - -	–	–	–	–
59,229	67,092	578	Abergavenny - - - L.	–	–	–	–
76,804	107,105	582	Merthyr Tydfil - - - -	–	–	–	–
63,508	61,726	–	Group A. - - - - -	316	15	316	17
84,779	98,880	–	Group B. - - - - -	253	29	363	43
122,016	136,417	–	Group C. - - - - -	314	31	430	24
17,927,609	20,066,224	–	England and Wales - - -	318	43	390	38

Note.—The letter H placed after the name of a district indicates that a hospital of some importance is situated within it, and the letter

General Register Office, Somerset House,
3 March 1864.

by Phthisis Pulmonalis, and by other Diseases of the Lungs, per 100,000 Living, in the undermentioned during the Decennial Period 1851–60.

PER 100,000 LIVING OF EACH CLASS REFERRED TO.

Aged 25–45.				Aged 45–55.				Aged 55–65.			
Males.		Females.		Males.		Females.		Males.		Females.	
Phthisis Pulmonalis	Other Diseases of the Lungs.	Phthisis Pulmonalis.	Other Diseases of the Lungs.	Phthisis Pulmonalis.	Other Diseases of the Lungs.	Phthisis Pulmonalis.	Other Diseases of the Lungs.	Phthisis Pulmonalis.	Other Diseases of the Lungs.	Phthisis Pulmonalis.	Other Diseases of the Lungs.
441	145	472	106	254	274	248	89	246	546	325	375
291	71	435	63	335	197	287	166	250	325	213	391
293	65	469	41	180	215	181	132	154	264	238	390
312	65	509	67	445	230	489	119	336	315	356	335
438	100	400	73	289	358	204	180	326	586	112	590
468	108	376	40	1,045	454	329	93	1,585	775	546	186
415	87	357	54	634	341	353	79	873	284	406	137
255	89	422	78	247	273	197	144	256	639	280	441
356	111	395	92	201	290	167	129	212	517	112	372
325	178	432	133	347	826	347	376	201	1,610	223	1,045
424	160	481	61	566	743	341	201	584	1,203	219	663
506	80	617	47	440	211	450	80	507	373	361	347
320	164	403	107	320	443	267	258	358	1,072	191	681
343	55	373	89	312	208	294	129	183	366	220	426
487	150	408	106	592	577	332	370	433	1,474	177	1,040
344	93	329	81	377	320	257	236	394	896	120	802
403	118	422	102	291	351	229	275	210	917	97	755
381	161	437	65	209	235	192	96	158	475	164	364
336	74	483	89	202	216	343	238	268	429	183	549
424	96	459	76	335	350	325	198	242	862	289	731
377	77	501	91	393	259	283	234	285	746	204	642
385	93	616	105	332	343	375	273	331	863	356	745
381	70	690	91	339	196	373	232	390	618	273	648
361	112	540	118	417	378	454	291	502	867	392	742
472	196	569	166	396	536	432	470	409	1,085	354	1,109
314	111	572	68	296	222	314	114	310	310	415	415
360	105	495	98	365	316	317	249	378	957	282	641
448	235	421	164	401	655	267	456	354	1,465	218	1,068
465	165	483	90	567	638	289	384	484	1,428	243	909
290	315	598	66	489	902	369	205	1,131	2,083	222	444
338	248	481	76	776	1,293	562	402	600	3,800	389	500
318	142	531	90	278	350	333	243	323	982	280	603
427	114	634	87	546	352	498	180	558	1,024	347	476
304	31	377	29	215	107	281	80	294	183	232	175
322	83	362	55	254	170	276	127	204	401	187	226
427	78	441	44	311	153	259	91	237	319	199	222
402	110	440	78	383	309	312	206	333	662	238	503

L signifies the presence of a Lunatic Asylum: repetitions of either of the letters show the number of such Institutions in any District.

George Graham,
Registrar General.

POPULATION AND DEATHS.

RETURN (in continuation of Parliamentary Paper, No. 12, of the present Session) stating the Population and Deaths in certain Groups of Districts during the Decennial Period 1851-60; also, a Return of the Population in 1851 and 1861, and of the Death Rates, Male and Female, by Phthisis Pulmonalis, and by other Diseases of the Lungs, per 100,000 living, in certain Districts and Groups of Districts, during the Decennial Period 1851-60.

(*Mr. Lowe.*)

Ordered, by The House of Commons, *to be Printed,*
4 *March* 1864.

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Under 1 *oz.*

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SUGGESTIONS

ON

The subject of Providing, Training, and Organizing Nurses for the Sick Poor in Workhouse Infirmaries.

Sir,

In order to reply in detail to the request I have had the honour to receive through you, from the Committee appointed by the President of the Poor Law Board, for suggestions on the subject of providing, training, and organizing Nurses for the sick poor in workhouse infirmaries, I begin by taking it for granted that we understand the same thing as to what is meant by the word "nursing."

The word "nursing" has very much improved its meaning during the last 10 years, and is improving its meaning every year more and more.

That there has been hitherto nothing of nursing but the name in workhouse infirmaries *in general*, I believe the Committee and I shall be agreed.

But, as a great experiment has been now for 18 months in operation to nurse the Liverpool Workhouse Infirmary by trained Nurses, as there are few or none of the London workhouses which have not now one or two or more paid Head Nurses, and as I read the terms of the question which the Committee have done me the honour of putting to me, I will take for granted that the intention is now really to inquire into the best system of nursing (best as conducing to the cure of the sick), and how to obtain it, and that there is no difference of opinion as to what nursing *is*.

Latterly there has been all over England a great movement to substitute for "paid nursing" paid TRAINED nursing. And, as it is not the payment but the training which makes the high efficiency of the Medical Officer, so and still more in the case of the Nurse it is not the payment but the training of the Nurse which makes her efficiency (though high efficiency will always be highly paid); I will therefore drop the word altogether of "paid Nurses," it being just as ridiculous as it would be to say instead of "qualified" Medical Officers, paid Medical Officers, and use the word *trained* (*i. e.* qualified) Nurses.

[An uneducated man who practises physic is justly called a quack, perhaps an impostor. Why are not uneducated Nurses called quaeks and impostors? Simply, I suppose, because there are few who think a man can understand medicine and surgery by instinct. But, till the last 10–20 years, people in England thought that every woman was a Nurse by instinct.]

I will not, therefore, discuss the question whether the "pauper Nurse" is to continue or not in workhouse infirmaries. But, supposing that the untrained pauper element *is* to be got rid of, go on to ascertain what kind of nursing is to replace it.

Are we to advertise for Nurses at good salaries, and take the best who turn up? that is, are we to make "pay" the test of efficiency? Or are there any other qualifications besides acceptance of office for pay which should be exacted of candidates for such appointments? As we have been saying, it was formerly supposed that nursing the sick was so easy that any woman could do it. But, like the old man who embraced the office of schoolmaster because he was not fit for anything else, the women who embraced the office of Nurse, especially of Midwife for the poor, or of hospital Nurse, were generally those who were too old, too weak, too drunken, too dirty, too stolid, or too bad to do anything else. They were, in fact, as nearly as possible, of the class from which now comes the "pauper Nurse," for few women go into a workhouse except from *defect*, defect of some kind or other, defect of body, defect of mind, or defect of morality.

[This is, of course, more especially the case in the workhouses of London or of any large town.]

At present there is, as already mentioned, a great movement over England, and indeed from the applications I receive, I may add, over the Colonies and India, the object of which is to offer inducements to the best instead of the worst women, and to train them in nursing duties under Matrons and Head Nurses (called in hospital language "Sisters") as the basis for all nursing appointments whatever. And, as we have seen, this movement has fortunately extended beyond the civil and military hospitals, beyond associations for nursing the sick poor at home, and has begun among workhouse sick to do its work.

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What your Committee desire to see carried out in workhouse infirmaries is therefore, I understand, the introduction of a trained and organized system of nursing the most efficient possible, together with the appliances which alone would afford it a fair chance of success.

I will, therefore, discuss the various points in the question under the following heads:—

1. The present sources of supply of trained Nurses.
2. Method of improving the supply of trained Nurses.
3. Relation of hospital management to efficient Nursing.
4. Structural arrangements in hospitals required for efficient Nursing.

1. The Present Sources of Supply of Trained Nurses.

From the almost daily references made (but not, alas! answered) from all parts of England, as well as from England's foreign dependencies, regarding a provision of trained Nurses for public establishments, for nursing village sick, and also, latterly, for workhouses, I can state that very few trained Nurses are available for workhouse infirmaries. Also that, to put one trained Nurse, however efficient, in an ordinary large workhouse infirmary of a large town, is very like putting a needle in a bottle of hay, or putting a new patch upon an old garment. It only makes the rent larger than it was before, and, as the rent was quite large enough already, and as we have never a stock on hand of such valuable articles as good Nurses to throw away upon making rents, I should discourage (and always have discouraged within my own province) the casting ashore of a Nurse, here and there, like Robinson Crusoe, on a desolate island, for some overcrowded institutions are *very* desolate islands.

Small, well-managed country institutions, where the sick may be nursed by one good trained Head Nurse, are the exception. To do this we have occasionally acceded.

Otherwise, no good can be done except by sending in (as at Liverpool Workhouse Infirmary) a trained Superintendent with a staff of trained Head Nurses under her.

I have been frequently asked whether London hospitals could not supply Nurses to workhouse infirmaries. If all the London hospitals had training schools for Nurses, which they have not, and would all train Nurses for workhouse infirmaries, which they would not, they could not supply the London workhouse infirmaries with Nurses. They can't supply themselves. The demand is at this moment far greater than the supply, and will be for years to come.

The Committee is perhaps hardly aware how often I have (and it is not only my experience, but that of every one of my cotemporaries who have done anything in the Nurse-training line) how often we have to answer to institutions, public and private—"We cannot supply you with Nurses. We might train for you a Superintendent and staff of Head Nurses, and then you must train for yourselves."

Besides,—a thing very little understood,—a good Nurse has her professional pride in results of her Nursing quite as much as a good Medical Officer in the results of his treatment. There *are* defective buildings, defective administrations, defective appliances, which make all good Nursing impossible. A good Nurse does not like to waste herself, and, the better the Nurse, the stronger this feeling in her. Humanity may overrule this feeling in a great emergency like a cholera outbreak; but I don't believe that it is in human nature for a good Nurse to bear up, with an ever-recurring ever-useless expenditure of activity, against the circumstances which make her nursing activity useless, or all but useless. Her work becomes slovenly like the rest, and it is a far greater pity to have a good Nurse wasting herself in this way than it would be to have a steam-engine running up and down the line all day without a train, wasting coals.

Perhaps I need scarcely add that Nurses must be paid the market price for their labour, like any other workers; and that this is yearly rising.

Our principle at our Training School at St. Thomas' is to train as many women as we can, to certificate them, and to find employment for them, making the best bargain for them, not only as to wages, but as to arrangements and facilities for success.

Any persons who will try this experiment of a Nurse Training School will find that they are engaged years deep, and that their difficulty is, not to obtain good situations for their trained Nurses, but to supply the demand, or a tithe of the demand.

As it is impracticable to provide complete staffs of trained Nurses at the present time, the only other courses open are to endeavour to complete a staff under a Superintendent (Matron) for one Workhouse infirmary, and make it a special duty of this staff to train Nurses for other infirmaries—

Or, to place as many competent Superintending Nurses or Matrons, one (or more) in

each workhouse infirmary, with the view of her doing the best she can to improve the nursing, in the hope that a sufficiency of Nurses, more or less trained, may be eventually obtained, so as to render a suitable organization possible.

As already said, I look upon this hope as almost hopeless. I look upon it as just throwing away so many live women—so much money—the nurse either breaks her heart, or neglects her duty.

More than this; "example," which we hear so much of, never tends to the best but to the worst.

In an alley or lodging-house the families always graduate downwards to the dirtiest family in the alley or lodging-house, not upwards to the cleanest.

How much more will this be the case when the Nurse is superior to the administration she serves!

To keep up the spirits, the courage, the activity—the aim at perfection, of Nurses—they must always be under a superior, who *is* superior to themselves.

It is so very important, therefore, to set the whole Nursing organization of any infirmary in the right groove at first, that I cannot but strongly feel that some one infirmary-staff and organization should be made complete from the beginning; and that this should be done, whatever intermediate course may be taken to supply nursing (or better nursing than the present) in the other workhouse infirmaries.

Suppose that this be agreed to, that one of the great London parishes or unions were to undertake the work, we should try to obtain a trained Superintendent and a sufficient number of trained Head Nurses under her to begin with.

This staff would introduce at once the system of trained and organized nursing as a whole into the infirmary to which they are sent.

[They must, of course, have Assistant Nurses under them.]

And the Superintendent might proceed at the same time to train as many suitable women as could be found for probation.

As already said, the demand for Nurses far, far exceeds the supply of women suitable for training at present.

But it is against the law of demand and supply that this should always continue.

I have, however, thought it right to state the difficulties which must be counted on in this (as in any other) work. And in this (as in any other) work, steadily undertaken, progress is being made in spite of all the difficulties, which are only those incident to new improvements, and require time and the help of public opinion, *i. e.*, of the public opinion of enlightened men, for their removal.

II. Method of Improving the Supply of Trained Nurses.

Supposing that an efficient staff were obtained to undertake the nursing of one large workhouse infirmary, and that the Superintendent were to proceed to train Nurses:—

The next question is, how to train?

A reply to this question is furnished by our experience; and, resting on this, the following system, or something like it, might be adopted.

It has answered sufficiently for all practical purposes and would probably answer in a workhouse infirmary, where the required number of patients and the means of training were to be found.

[I would add what I think important, that there is this advantage in organizing a special infirmary nursing service—an advantage which attaches to any regular service—viz., that a prospect of promotion may be held out, not, of course, by seniority, but by selection for superior merit and distinguished service, in which length of service would be considered.

I do not enter further into this suggestion, because it will be supposed to entail Government interference; and it is not my province to enter into that.]

Supposing, then, for the sake of argument, that you have the means of training, viz., a capable Matron, Medical Officers willing to help, and suitable material, probably you could not do better than frame your procedure upon the Rules for admission and training Nurses at St. Thomas's and King's College Hospitals, under the "Nightingale Fund." The Probationer Nurses at St. Thomas's are trained in general nursing duties; those at King's College Hospital specially in midwifery and midwifery nursing.

In the process of training, the following are the steps:

Every woman applying for admission is required to fill up the Form of Application (Appendix No. 1), which is supplied to her by the Matron of St. Thomas's Hospital, on application.

Appendix No. 2 are the Regulations under which the Probationer is admitted to training.

After being received on a month's trial and trained for a month, if the woman shows sufficient aptitude and character, and is herself desirous to complete her training, she is required to come under the obligation (Appendix No. 2a), which is printed on the back of No. 2, binding her to enter into hospital service for at least four years. This is the only recompense the Committee exact for the costs and advantages of training.

The list of "Duties," (Appendix No. 3), is put into the hands of every Probationer on entering the service, as a general instruction for her guidance, and she is checked off by the Matron and "Sisters" (Head Nurses) in these same duties, as will be mentioned immediately.

Appendix No. 4 is the Day and Night Time Table, to which all Probationers are required generally to conform.

It prescribes the time of rising, the ward hours, time of meals, time of exercise, hours of rest.

From the nature of midwifery training, it is not practicable to exact the same system at King's College Hospital Midwifery ward as in the regulated wards of St. Thomas's Hospital.

The class of duties required of Midwifery Nurses is also different, but the principles and methods of selection and of training are much the same, as also the conditions of admission and of service.

I would add that, owing to the large number of women annually delivered in London workhouses, a far more important school for Midwives could be formed there than in King's College Hospital or in any Lying-in institution in London or the United Kingdom; and that Midwifery Nurses might be thus formed, for whom, we find, there is now a considerable demand by ladies' committees and other institutions (chiefly benevolent) which pay them well.

Once admitted to St. Thomas's Hospital, the Probationer is placed under a Head Nurse (Ward "Sister") having charge of a ward. In addition to her salary received from the Hospital, the Ward "Sister" is paid by the "Fund" for training these Probationers. The number of Probationers she can adequately train of course depends on the size and arrangement of her ward and its number of beds.

The Ward "Sisters" are all under an able Matron, who superintends the training of the Probationers, in addition to her other duties, for which the "Fund" pays her a salary, irrespective of her salary as Matron to St. Thomas's Hospital.

The ward training of the Probationers is thus carried out under the Ward "Sisters" and Matron.

To ensure efficiency, each Ward "Sister" is supplied with a Book in the Form Appendix No. 5, which corresponds generally with the List of Duties, Appendix No. 3, given to the Probationer on her entrance.

The columns in the Ward "Sister's" Book are filled up by suitable marks once a week.

Besides the ward training properly so called, there are a number of duties of a medical and surgical character, in which the Probationers have to be practically instructed. And this instruction is given by the Resident Medical Officer at the bedside or otherwise, for which he is remunerated by the "Fund," independently, of course, of his salary as Permanent Medical Officer of the Hospital.

St. Thomas's Hospital is the seat of a well-known Medical School, several of the Professors attached to which, voluntarily and without remuneration, give lectures to the Probationers on subjects connected with their special duties, such as elementary instruction in chemistry, with reference to air, water, food, &c.; physiology, with reference to a knowledge of the leading functions of the body, and general instruction on medical and surgical topics.

At King's College Hospital instructions are given in midwifery and matters connected with the diseases of women and children, during the time of the special training in midwifery.

While the Ward "Sisters" are required to keep a weekly record of the progress of the "Probationers," the Probationers themselves are required to keep a diary of their ward work, in which they write day by day an account of their duties. They are also required to record special cases of disease, injury, or operation, with the daily changes in the case, and the daily alterations in management, such as a Nurse requires to know.

Besides these books, each Probationer keeps notes of the lectures.

All these records kept by the Probationers are carefully examined, and are found to afford important indications of the capabilities of the Probationer.

A Register, Appendix No. 6, is kept by the Matron of St. Thomas's. It will be seen that it corresponds with the Ward "Sister's" Book, No. 5, and has space for monthly entries during the entire year of training.

At the end of the year all the documents are carefully examined by the Committee of the "Nightingale Fund," and the character the Nurse receives is made to correspond as nearly as may be with the results of the training.

We do not give the women a printed certificate, but simply enter the names of all certificated Nurses in the Register as such. This was done to prevent them, in the event of misconduct, from using their certificates improperly. When a Nurse has satisfactorily earned the gratuity attached to her certificate, the Committee, through the Secretary, communicate with her and forward the money.

You will see that the elements required for working such a system of training are:—

a. A good Hospital or Infirmary.

b. A competent Training Matron (by such a Matron we do not mean a woman whose business is limited to looking after the linen and housekeeping of the Hospital, either wholly or mostly, but a woman who, whatever may be her duties as head of the Establishment, performs chiefly and above all others the duty of superintending the nursing of the sick). As in Workhouses it is the custom for the Matron to be simply housekeeper, there must obviously be a separate Training and Nursing Matron (as is now established in one of the largest workhouse infirmaries in the kingdom), *and competent* to train. The number she could train would depend mainly on the construction of the Hospital, and on the capabilities of the "Head Nurses" or "Ward Sisters" under her.

c. Competent "Head Nurses."

If such Head Nurses are or can be appointed, they should be responsible to the Training Matron. The Training Matron is not to be responsible in any case to the Workhouse Matron. There should, of course, be but one Infirmary Matron with a Housekeeper subordinate to her. The Infirmary Matron must not be the Workhouse Matron.

The Head Nurses must be competent trainers. Each might perhaps train four Probationers in a properly constructed ward.

Of course the Training Matron, if she is to be herself her only Head Nurse, can only train such a number of Probationers as a Head Nurse could train.

Our period of training is one year for a Nurse, but we should much prefer giving two years to train those who have to train others in their turn.

The Training and Nursing Matron should be responsible to the Governing authorities of the Infirmary, or to any Committee appointed by them for the purpose.

It is taken for granted that the Medical Officers of Hospitals where training is to be carried on are willing to render every assistance in their power in aiding the training by oral instruction and bedside work.

All Nurses, after training, might be certificated by the Governing Body or Poor Law Board, in the manner mentioned.

Sufficient has been said on the subject of training to show that the success of any system must primarily depend upon your obtaining Trained Nurses, themselves capable of training others.

If it should so happen that a good Training Matron cannot be found, the best way would be to select a competent woman, and send her for training.

It would indeed be in every way most desirable to begin the work of Workhouse Hospital nursing with a complete staff, as well as of training at any Workhouse Hospital that may be considered best suited for the object.

The Lady Superintendent at King's College Hospital might possibly undertake the nursing and training at a Workhouse Infirmary, as she has already done at Charing Cross Hospital, in addition to King's College Hospital.

If considered advisable, in the course of time, there might be a Trained Superintendent-General for the whole of the Metropolitan Workhouse Infirmaries, responsible directly to the Poor Law Board. Under this Trained Superintendent-General might be placed all Matrons and Nurses of Workhouse Hospitals. The Nurses should be selected by her. These Nurses should train others. (It is not meant that she should be an Inspectress, living at home. She should reside in the Principal Workhouse Infirmary as her head quarters, where the Training School is.)

It is hardly necessary to state that no women but of unblemished character can

ever be admitted as Nurses. Workhouse Infirmaries are the worst places to employ penitents in.

It is perhaps thought, 1, that my requirements for a good Nurse involve that she should be *perfect*, both as a woman and as a Nurse; that a search for any such is a search for a roc's egg; 2, that women above 25 years of age, with such characters as are required, are either settled in good situations, or, at all events, that their prospects are such that they would not be likely to go into Hospital service.

I reply, 1, that my requirements refer to women as they are, and that they exclude the obviously unfit, without aiming at an imaginary or too high standard.

2. On this I humbly suggest that the point is *not* that women who have to earn their bread will not be likely, after 25 years of age, to embrace an occupation which cannot be exercised under that age; on the contrary, not a newspaper but contains advertisements for women "not under 25" or "30 years of age" to fill situations of trust, both in Institutions and in domestic service, to be children's nurses, matrons, "confidential" servants of all kinds. The real point is, that women who have to earn their bread cannot, after 25 years of age, seek situations which require a year's previous training; this, which is often overlooked, is so important that one *sine qua non* for all Institutions which train Nurses is, that the Probationers, if really good subjects are to be obtained, should receive wages during their year's training.

I ought to say something on the question of training able-bodied female paupers as Nurses.

I will answer the question by another question.

Are we to expect that we shall find suitable women for an occupation which requires, perhaps above every other occupation, sobriety, honesty, trustworthiness, truthfulness, orderliness, cleanliness, good character, and good health, among those who, nearly all, at least in the workhouses of large towns, are there because they have *not* been sober, *not* been honest, *not* been trustworthy or truthful, *not* been orderly or cleanly, *not* had good character or good health, because they have *not* been one or any of these things, because they have failed in one or all of these?

Is it likely?

It is possible that in country unions a better material might be found.

But there is another experiment about which I have heretofore been asked to make an inquiry, and to give an opinion; and I have done so.

This is, whether, among the large Union Schools, a number of girls might not be found willing and suitable to be trained as Nurses.

As mentioned, I have made considerable inquiry into this.

These girls are usually put out to service between the ages of 14 and 16.

This is quite too young to put them at once into any kind of infirmary or hospital to take their chance altogether with the other Probationers, especially in the men's wards.

But it is not at all too young, where arrangements and provision can be made under a proper female head, for them to learn sick cookery, cleaning, needle-work, orderly habits, all that is learnt in a servants' training-school, and to take their turn in doing what they can be taught to do in the children's sick wards, and in the female sick wards, till the full-blown hospital Nurse is developed out of them.

Girls of from 14 to 16 years of age are not at all too young to choose between domestic service or hospital nursing, under the restrictions mentioned above.

If there were one large workhouse infirmary establishment to begin with, such as is proposed above, as a Training School for Nurses, it would not be difficult to attach to it an Industrial School for Girls, as suggested.

The Infirmary Training Matron must be the head of all; under her, one good capable woman to take special charge of the girls, as in a "Home," and to apportion them their duties.

Of course the expense might be an objection. It is certainly easier to get rid of the girls altogether and at once into service.

On the other hand, there is at present a great dearth of the material for good Nurses. Here it might be found. These girls, if trained into good hospital Nurses, would earn higher wages than girls who enter domestic service at 14 or 15 years of age ever would do. And they would be far less likely to fall into temptation (which fall so often brings back to the Workhouse girls sent out to service too early). It might be that, instead of hospitals supplying workhouse infirmaries with Nurses, workhouse infirmaries might in time be able to supply hospitals. Besides, the labour of these girls while in training would not be valueless.

I need hardly say that, if the idea were entertained of carrying out this suggestion,

I should be most happy to aid in every way in my power, as well as to lay before the Committee any information in my possession.

III. Relation of Hospital Management to Efficient Nursing.

Equal in importance to the provision of trained Nurses is the nature of the hospital authority under which these Nurses are to perform their duties. For, unless an understanding is come to on this point, the very existence of good nursing is an impossibility.

In dealing with this question I may state at once that, to turn any number of trained Nurses into any workhouse infirmary to act under the superintendence or instructions of any workhouse Master, or workhouse Matron, or Medical Officer would be sheer waste of good money.

This is not matter of opinion, but of fact and experience.

The "original sin" of this part of the workhouse infirmary system, or no system, has been,—

1. The nature of the authority.
2. The nature of the nursing material on which the authority has been exercised.

There has never been any express provision made for the care of sick in workhouses. The reception of sick is, in them, an accident, an excrescence.

The law is perfectly right in limiting the comforts of able-bodied poor in workhouses to those required simply for preserving life in health. There must be some check on the constant tendency of a certain class to descend into pauperism, and this necessity is more or less kept in view in the administration of all workhouses, everywhere, in all their parts.

But the very opposite conditions are required to cure the sick, and the very opposite is the object. By curing the sick you prevent pauperism, both for themselves and their families, and you don't cure the sick by the measures which repress pauperism. From the instant the poor man becomes sick he ceases, by the fact, from being the legitimate object of any such repressive measure. On the contrary, the best policy and economy (leaving motives of humanity out of the question) is to cure him as quickly as possible, so that he may return to his work, and cease to be a cause of expense to the rates.

This principle is so obvious an one that it is scarcely necessary to enunciate it, were it not that it must be prominently recognised, if we are to improve the administration, in order to make improvement possible in the nursing, of workhouse infirmaries.

The very best workhouse master and mistress would, from their very efficiency against the spread of pauperism, be the very worst to place over any efficient nursing staff.

[There is, besides, absolutely no more real connexion between an infirmary and a workhouse than between an infirmary and a railway establishment.]

Indeed, the more efficient the master and mistress are in the workhouse, the less would they be fit to discharge the totally distinct duties of hospital administrators.

Place an efficient Superintendent of Nurses with her staff in charge of a workhouse infirmary, and the master or mistress would at once be brought in contact with a class of new duties, carefully performed, the very sight and knowledge of which would be a standing protest against all that he or she had ever been in the habit of doing for sick, and almost all that he or she would consider to be necessary for their care and comfort.

This, again, is no theory. It is simply the statement in a few words of experience already obtained. There would be, as there has been, a constant clashing of jurisdictions and authorities, constant differences of opinion as to what was and what was not necessary. The sick would suffer; and in the end either the Master or the Superintendent of Nurses would have to resign or be dismissed.

In the recent inquiries made by the Poor Law Board, the point which strikes an experienced hospital manager is not the individual cases which have been made so much of, (though these are striking enough), but the view which the best Matrons, the best Masters, and other officials of the workhouses, gave from their own lips (in evidence) of what they considered their duties. These bore as little reference to what are usually considered (not by me alone, but by all Christendom,) the duties of hospital superintendents as they bear to the duties of railway superintendents.

Your Committee is probably well acquainted with the administration of the "*Assistance Publique*" at Paris. No great stretch of imagination is required to conceive what they think of the system or no system reigning here.

I do not allude here, of course, to the system of "local self-government" or of central government, or of any other government. This it is not my province to discuss. I allude to the heaping up aged, infirm, sick, able-bodied, lunatics, and sometimes children in the same building, instead of having, as in every other Christian country, your asylum for aged, your hospital for sick, your lunatic asylum, your union school, &c., &c., &c.,

each under its proper administration, and your able-bodied quite apart from any of these categories.

This point is of such vital importance to the introduction and successful working of an efficient nursing system, that I shall illustrate it by one other case.

Supposing that the future workhouse administration of the metropolis were to be connected with the existing civil hospitals, and that the administrative officers of these hospitals, committees, stewards, secretaries, treasurers, and the like, were to attempt to administer the Poor Law, as regards the able-bodied, on the same principles as they administer for the sick in their hospitals, what kind of a result would follow?

The question answers itself. Rather, it is "a question not to be asked." The administration required for curing the sick is a thing so totally different from the administration required for keeping down pauperism and poor rates, that it is simply impossible that they should both be carried out on the same principles. Any attempt to combine the two by beginning at either end must end in failure, "in falling between two stools."

Of course this objection has most force as applied to unions or parishes where there are numbers of sick people. In small country parishes with a few sick beds, the difficulties are so small that they could be met by other arrangements. The question here discussed regards the Metropolitan workhouse infirmaries, and those of other large unions, some of which contain a larger number of sick than are contained in any of the largest London hospitals.

In these cases, a thoroughly efficient system of sick management and nursing would involve a sick administration, separate from the pauper administration of the workhouse.

There must be a separate administrative department, to undertake duties similar to those performed by officers of civil hospitals. And, under this department would have to be placed the nursing establishment, subject to conditions I shall afterwards enumerate.

An obvious objection, however, arises to these separate infirmary administrations, viz., their expense. Because a separate set of officers, Superintendents of Nurses, &c., &c., would be required for every one of 39 unions and parishes in London alone, however small the number of sick.

Now good hospital Governors, good Superintendents and Head Nurses, good hospital officials of all kinds, are not only rare, but expensive articles.

So are good buildings.

Hence it follows that, in order to save cost, infirmaries should be consolidated as much as possible.

One hospital Governor and one Superintendent (Matron) of Nurses, would answer for from 500 to 900 or 1,000 sick, as well as (or better than) for 50. And this, because it is a cardinal point in hospital work to fill up everybody's time with duty, and to leave no time for gossip.

Also, it is notorious that large numbers can be provided for at a lesser cost per head than small numbers, that housekeeping on a large scale is more economical than on a small one, and that subdivision of labour saves money, that is, if we are supposed to be trying for efficiency. There is nothing in the long run, too, more extravagant than inefficiency.

It is not for me to consider to what extent consolidation should be carried. But it is a most important element in the question, and one which must be dealt with, if there is to be success in raising the condition of the sick poor in workhouse infirmaries to something like the condition of the sick poor in civil hospitals, which we take for granted is one main object of the President of the Poor Law Board in directing the present inquiry to be carried out.

Experienced administrators will scarcely suppose that I mean to imply an independence, and to ask for uncontrolled hospital authority, for the nursing staff, in what I have said.

On the contrary:—Vest the charge of financial matters and general supervision, and the whole administration of the infirmary in the board or committee; *i.e.*, in the officer, say a Governor, who is responsible to that board or committee. Vest the whole responsibility for the nursing, the internal management, and the discipline of the Nurses in the one female head of the nursing staff, whatever she is called.

The necessity of this, again, is not matter of opinion, but of fact and experience. I will enter a little more fully into this, viz., the relation which the nursing establishment ought to bear to the Government of the hospital.

The Matron or Nursing Superintendent must be held responsible for her own efficiency, and the efficiency of all her Nurses and servants. As regards the Medical Officers, she

must be responsible that their orders about the treatment of the sick are strictly carried out.

To the governing body of the hospital, she must be held responsible for the conduct, discipline, and duties of her Nurses, for the discipline of her sick wards, for their cleanliness, for the care and cleanliness of sick, for proper ventilation and warming of wards, for the administration of diets and medicines, of enemas, &c ; the performance of minor dressings, and the like, for the care of linen and bedding, &c., and probably of patients' clothing.

The duties which each gradc has to perform should be laid down by Regulation, and all that the Medical Department or the Governing Body of the Hospital has a right to require is that the Regulation duties shall be faithfully performed.

Any remissness or neglect of duty is a breach of discipline as well as drunkenness or other bad conduct, and can only be dealt with to any good purpose by report to the Matron (Superintendent of Nurses) of the Workhouse Infirmary.

I may perhaps again point out that the Superintendent should herself be responsible to the constituted Hospital authorities, and that all her Nurses and servants should, in the performance of these duties, be responsible to the Superintendent only.

No good ever comes of the constituted authorities placing themselvcs in the office which they have sanctioned her occupying.

No good ever comes of any one interfering between the head of the nursing establishment and her Nurscs.

All complaints on any subject should be made directly to the Superintendent, and not to any Nurse or servant.

Shc should be made responsible, too, for her results and not for her methods.

Of course, if she does not exercise the authority entrusted to her with judgment and discretion, it is then the legitimate province of the governing body to interfere, and to remove her.

It is necessary to dwell strongly on this point, because there has been not unfrequently a disposition shown to make the nursing establishment responsible on the side of discipline to the Medical Officer, or the Governor of a Hospital.

Any attcmpt to introduce such a system would be merely to try anew and fail anew in an attempt which has frequently been made. In disciplinary matters, a woman only can understand a woman.

It is the duty of the Medical Officer to give what orders, in regard to the sick, he thinks fit to the Nurses. And it is unquestionably thc duty of the Nurses to obey or to see his orders carried out.

Simplicity of rules, placing the Nurses in all matters regarding managemcnt of sick absolutely under the orders of the medical men, and in all disciplinary matters absolutely under the female Superintendent (Matron), to whom the Medical Officers should report all cases of neglect, is very important. At the outset there must be a clear and recorded definition of the limits of these two classes of jurisdiction.

But neither the Medical Officer nor any other male head should ever have power to punish for disobedience. His duty should end with reporting the case to the female head who, as already stated, is responsible to the governing authority of the hospital.

IV. Structural Arrangements in Hospitals required for Efficient Nursing.

One essential condition of good infirmary discipline is that the Matron and her nursing staff should have their own special quarters within the precincts of the hospital building. No woman, be she Supcrintendent, Head Nurse, Nurse, night Nurse, or Scrubbcr, employed about the patients should be boarded or lodged elsewhere than in the building.

The night Nurses should sleep where they will be undisturbed by day. Every Nursc ought to have, if not a small room, a compartment to herself. The Matron's authority, for obvious rcasons, must be supreme in thesc quarters.

A good nursing staff will perform their duties more or less satisfactorily, under every disadvantage. But while doing so, their head will always try to improve thcir surroundings in such a way as to liberate them from subsidiary work, and to enable them to devote their time more exclusively to the care of the sick. This is, after all, the rcal purpose of their being there at all, not to act as lifts, watcr-carriers, beasts of burden, or steam engines—articles whose labour can be had at vastly less cost than that of educated human beings.

Hence certain ward conveniences form absolutely essential parts of the machinery required to economize the time of good Nurses. These have been or are being provided in all the more recent hospitals and asylums, both at home and abroad, in pauper

lunatic asylums, in asylums for the infirm and aged, in nearly every civilized country; in countries, too, where labour has a much lower market value than in our own.

The general object of these conveniences is to simplify and facilitate work and to enable the Superintendent to systematize and economize the labour of her staff by knowing the conditions under which it has to be performed.

[*E. g.* lifts and the laying of hot and cold water all over a building will economize the labour of at least one attendant to every 30 patients; this is but a small instance.]

It would be a great mistake to turn an efficient nursing corps into a building unprovided with reasonable means for performing their duty. A Head Nurse cannot always be in her ward. She must have a small room, with fire and furniture, where she sleeps at night (for a Head Nurse must command her ward day and night), takes her meals, inspects her ward through a small inspection-window, keeps her ward records, &c. Each ward should have, besides, a small scullery with sink and hot and cold water laid on; with small range for making poultices, preparing fomentations, warming diets and drinks, &c., &c.

The sink is intended for washing up small ward equipments, *e.g.*, cups, saucers, mugs, spoons, and the like.

A separate sink must be provided close to the ward W.C., into which the Nurse can empty bed-pans, slops, expectoration cups, and the like.

Each ward must be provided with its own crockery, wash hand basins, cups and saucers, &c.

A very essential part of nursing is care of the linen; and this must always be committed to the Matron (Superintendent). This duty requires a linen and mending room, conveniently situated, from which clean linen can be given out for the daily use of the wards, and into which clean linen should be received from the wash to be mended and stored.

Probably patients' clothing will have to be included.

Of course each ward will have its proper W.C.s and Lavatories, with hot and cold water laid on, and a fixed bath—conveniences which are as necessary for the due treatment of the sick as for their nursing.

Till the last few years in England, though not so in France, it has been very little considered how much the cost of *efficient* nursing varies according to the size and distribution of wards.

A Head Nurse can efficiently supervise, a night Nurse can carefully watch, 32 beds in one ward, whereas, with 32 beds in four wards, it is quite impossible.

Again, distribution of duties is so important, if you wish for efficiency, that it is difficult to believe that such a rule as this once existed—one Nurse to be responsible for the sole charge of, say, 10 patients. Was she to do everything for them day and night? Of course this was impossible. If she were a Head Nurse, it was wasting her, because she might as well have had the charge of 32, or even 64 patients, if these were in two wards on the same floor. The same may be said of the night Nurse. If she were an under Nurse, there was no supervision over her, and she was utterly incapable really to take charge. If she were a Head Nurse, again, she was called upon to perform duties which are just so much lost time for her to do.

It is extremely important, therefore, to consider what is the greatest number of beds per ward which will effect the least cost in nursing staff.

This appears now to have been fixed by European hospital experience at between 24 and 32 beds per ward. I prefer the larger number.

It is now generally admitted by authorities on hospitals that the superficial area allowed per bed is practically an element of more importance than the mere cubic space, at least as regards healthiness; but it has been overlooked, or at all events not sufficiently recognized, that a nursing staff requires room for work, just as much as any other staff. It is of no use supplying a workhouse infirmary with the most efficient nursing establishment, if there is not room for them to turn round in for the due exercise of their functions. Of course there is a difference in the amount of care required in the nursing of different patients; but, wherever there is a Nurse, there must be room for her; space must be given for the Nurse to pass easily between the beds, and for more Nurses than one, besides the Medical Officers, and (may be) Probationers.

Although there has been no distinctly recognized rule in this matter, the practice of all the best hospitals shows that the question of working area has tacitly received a solution.

In some cases the solution has no doubt been arrived at while endeavouring to improve the healthiness of the wards; and, in doing so, the area required for good nursing has also been decided.

In this matter we ought to be guided by what are manifestly the lessons of experience; and these I will now proceed to state by reference to some of the general hospitals into which systematic nursing has been introduced.

The Royal Commission on the Sanitary State of the Army, 1857, directed its attention to this subject, and obtained certain data from the leading hospitals in the metropolis, from which the following superficial areas per bed have been calculated:—

	Sq. ft. per bed.
Royal Free Hospital	105
London	104
Guy's	138 max.
Middlesex	88
St. Thomas's (old)	101 max.
St. Bartholomew's	79
St. George's	69

It will be seen that there is some diversity in these allotments of space; and a similar difference exists in provincial hospitals, in certain of which the superficial space is from 110 to 120 square feet, while in others it ranges between 70 and 80.

The space allowed in some of the Naval Hospitals, where there are Nurses, is as follows:—

	Sq. ft. per bed.
Haslar	77
Plymouth	79

In Military Hospitals:—

	Sq. ft. per bed.
Herbert Hospital, Woolwich	99
Netley (a hospital not intended for sick, but for invalids *in transitu*, only a fourth of whom are confined to bed)	103

In the more recent great Paris hospitals, nursed by Sisterhoods:—

	Sq. ft. per bed.
Lariboisière	104
Vincennes (Military)	90

In the new Hotel Dieu, now being built, where a part of the patients are exactly of the same class as that received in the London workhouse infirmaries (as is well known, the Paris hospitals receive not only the patients who in London are sent to the hospitals, but also those who are sent to workhouse infirmaries),—

	Sq. ft. per bed.
In the 26-bed wards	110
In the 6-bed wards	104

(The same as at Lariboisière.)

In addition to this experience, I have made special inquiry as to the superficial area found to be required for efficient nursing in those hospitals where Nurses are trained under the "Nightingale Fund."

At King's College Hospital it is found that 105 square feet is sufficient for good nursing and ward administration, except in the lying-in wards, where the superficial area is much more.

I have already given the space in old St. Thomas' at 101 square feet.

When the plans of the new St. Thomas' were under consideration it was at one time proposed to give as much as 126 sq. ft. per bed; but the exigencies of the site rendered it necessary to reduce this amount to 112 square feet, which, I am informed, will be sufficient.

All these superficial areas are intended for general hospitals, but it is in the highest degree doubtful whether any of them would be enough for a lying-in or special hospital.

In fever hospitals there is a great and constant sacrifice of life in the establishment itself. Scarcely a year passes in which some most valuable lives, both among medical and nursing attendants, are not lost, in consequence of defective structural arrangements and bad sanitary conditions, under which they have to do their work. One of the most obvious of these defective conditions is want of sufficient area. If large fever hospitals must exist, then the superficial area per bed must be increased, not only for nursing, but to give increased security for the health and life of the Nurses.*

It may be said that you must fit your nursing arrangements to your sick, and not your sick to your nursing arrangements, and that Nurses must take their chance of fevers.

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* Of course the very large area required for safety where a considerable number of fever cases are treated under one roof may be reduced, if the sick are subdivided into small numbers in separate buildings, *e.g.*, in huts.

Perfectly true as far as the sick are concerned; but most untrue as far as the hospital arrangements are concerned.

Every employer of labour is bound to provide for the health of the workers. And any society which professes to provide for sick, and so provides for them that the lives of Nurses and of Medical Officers have to be sacrificed in the discharge of their duty, gives sufficient proof that providing for the care of sick is not its calling.

For, as it happens, the arrangements required for the welfare of sick are the very same which are required for the health of Nurses, Nurses, that is, who are really discharging their duty in constant attendance on sick.

But in dealing with the question of superficial area required for nursing, it is said that the special class of cases to be nursed must be considered; that we must also take into consideration the fact that many hospitals have large medical schools attached to them; that in a ward where all the cases are of a severe character a larger nursing staff and, in consequence, more area will be required than where all the cases are of a comparatively slight character.

Whatever apparent truth there may be in such a statement, we must not lose sight of the fact that Nurses are there because patients are there, and not because case A. is severe and case B. is not severe. The prior question is, whether there should be an infirmary with patients in it at all, and if this be decided in the affirmative, then a nursing staff, with the required conditions for good nursing, must be provided. If severe cases occur, a good Superintendent or a good Head Nurse will always economize her staff so as to provide attendance for them, except, *e.g.*, in a severe epidemic outbreak, as of cholera, when temporary assistance may be required.

It has been said that a considerable proportion of the workhouse sick being infirm and aged, they cannot require such good nursing as hospital sick require; but this is a mistake. Many of these are "helpless cases," "dirty cases;" such require more careful nursing than any, and receive it at all good Establishments for infirm and invalids, both in England and abroad.

I cannot suppose that in any improved nursing arrangements it can be contemplated to neglect this class of patients. But, as such distinctions have been made, it is necessary to refer to them.

Again, it may not always be possible to define what cases are "acute," and what cases are "infirm." But this cannot alter the relation of nursing.

As to the argument drawn from the existence of medical schools this is a matter apart from nursing, and it will be found, on reference to the practice of a number of hospitals, both in this country and abroad, that a sufficient area per bed for nursing is often given where there is no medical school.

But the extent of surface area necessary will depend on the structure of the ward. In this, as in other matters, bad construction is always the most costly. A ward with windows improperly placed so as to give deficient light, or where the beds are so placed that the Nurse must necessarily obstruct the light in attending to her patient, must have the bed space so arranged and of such dimensions as to allow of sufficient light falling on the bed. In well-constructed wards with opposite windows the greatest economy of surface area can be effected, because the area can be best allotted with reference both to light and room for work. An infirmary ward might be constructed 24 feet in width, with a window for every two beds, and in such a ward a 7 ft. 6 in. bed space along the walls would probably be sufficient. This would give 90 square feet per bed, and there should be as little reduction as possible below this amount for average cases of sickness, excluding zymotic diseases and lying-in cases. As already stated, this space is much too small for fever or lying-in wards.

In sick wards, as in other sick rooms, there are certain things which are very desirable but not absolutely necessary. One of these would be a greater breadth of ward than 24 ft., and the reason of this is, that the greater breadth affords more space for certain articles of furniture down the middle of the ward, and also greater facilities for the movement of patients who can leave their beds. I do not think that the idea of this greater width and area should be set aside altogether. It would be desirable to give more breadth, although not absolutely necessary. There is no reason why workhouse infirmaries should be excluded from progress in improvements in such matters any more than other hospitals; and although I have given 24 feet as the minimum width of a good ward, and 7 ft. 6 in. as the minimum wall space for good nursing, I adhere to my published opinion that in this climate not less than 100 square feet per bed, and not less than eight feet of wall space, or five feet between the beds, is the amount which should be given for general cases. I may state with reference to two great hospitals at present under construction, St. Thomas's and the Hotel Dieu, that the ward width is 28 ft. in the former, and 29 feet in the latter.

I may perhaps be permitted again to allude to the fact that the Hotel Dieu, as other Paris hospitals, receives not only hospital cases, but workhouse infirmary cases, as they are called in England.*

Summary.

I have entered into considerable detail in the preceding remarks, because it is absolutely indispensable that the relation of efficient infirmary nursing to training, organization, infirmary management, and infirmary construction, should be thoroughly understood before a trustworthy decision can be arrived at on the question by your Committee. And I shall conclude with a recapitulation of those requirements, without which any attempt, not at ostensibly improving (for that is to "keep the word of promise to our ear, "and break it to our hope"), but at really improving the nursing of the sick poor, at present admitted into workhouses, would be attended with results not worth the trouble and outlay.

1. Hired Nurses, unless they are also *trained* Nurses, are not worth their hire, unless by accident.

There must be trained Matrons (Superintendents) to superintend trained Nurses.

2. At the present time it is impossible to obtain either trained Matrons or trained Nurses for the London workhouse infirmaries.

3. An attempt should be made (in which I should be glad to render any assistance in my power) to obtain by training a sufficient staff to undertake the work in one of the largest Metropolitan workhouse infirmaries.

4. Every trained and organized nursing staff should, as one of its duties, undertake the training of Nurses for infirmary work, on some such plan as that, the details of which have been given above.

5. The government of the infirmary should in future be separated from the government of the workhouse as an indispensable condition to success.

6. The Matron (Superintendent) should be responsible to the government of the infirmary alone for the efficient discharge of her duties; and the Nurses should be responsible to the Matron alone for the discharge of their duties.

7. The larger the number of sick (up to 800 or 1,000) under one hospital government and under one Matron the better, both for economy and efficiency. Without consolidation of workhouse hospitals, a great and quite needless expenditure must be incurred in attempting to secure the conditions under which efficient nursing can be carried out.

8. It has been proved by experience that the efficiency of nursing is to a considerable extent dependent on hospital construction, and on the kind of accommodation provided for the nursing service. The following structural arrangements are among the most necessary for this object:—

a. The larger the sick wards, up to, say, 32 beds, the less expense is necessary for nursing staff, because supervision is so much easier with a given staff where the wards are large than where they are small.

b. The Matron and the whole of her Nurses must be lodged within the hospital buildings.

c. The Matron should have sole charge and responsibility of mending, storing, and issuing linen. Hence a linen store and mending room close to the Matron's quarters are required. [Patients' clothing and bedding, &c. will probably also come under the Matron.]

d. Each ward should have a small room for the Head Nurse, suitably furnished.

e. Each ward should have a small scullery, with hot and cold water supply, besides the usual lavatory, bath, and watercloset accommodation.

f. The superficial area per bed required for good nursing and good ward administration will depend on the form of the ward. More is required where the ward is badly shaped and insufficiently lighted than where the floor and window space are properly arranged. With well-proportioned wards and windows on opposite sides, with the beds between the windows, the floor space per bed should fall as little as possible under 90 square feet.

I have said nothing regarding the regulations under which good nursing can be best carried out, because the nature of these regulations will depend on the nature of the administration to be adopted. When this is decided I should be glad to render any assistance in my power in stating the points necessary to be included under this head.

FLORENCE NIGHTINGALE,

Sir Thomas Watson, Bart., M.D., F.R.S. London, January 19, 1867.

* To show that these improvements are not limited to hospitals, I may state that the "*Assistance Publique*" at Paris has a proposal for erecting a new establishment for 2,000 infirm of both sexes, including infirmary cases, with a breadth of ward buildings of 26 feet, and eight feet per bed of wall space over all.

APPENDIX.

No. 1.

FORM to be filled up by PERSONS applying for ADMISSION as PROBATIONERS.

Name	Age.	Place of Birth.	Where educated.	Previous Occupation.	Whether Single or Married, or Widow.*	If Married, or a Widow, whether with Children, and if so, with how many.	References.

* The Marriage certificate will be required.

I declare the above statements to be correct,

Signature, _____

No. 2.

REGULATIONS as to the TRAINING of HOSPITAL NURSES under the NIGHTINGALE FUND.

1. The Committee of the Nightingale Fund have made arrangements with the authorities of St. Thomas's Hospital for giving a year's training to women desirous of working as Hospital Nurses.

2. Women desirous of receiving this course of training should apply to Mrs. Wardroper, the Matron, at St. Thomas's Hospital, subject to whose selection they will be received into the Hospital as Probationers. The age considered desirable for Probationers is from 25 to 35; a certificate of age and testimonial of character, according to a form which will be supplied by Mrs. Wardroper, will be required, also the name and address of Medical Attendant.

3. The Probationers will be under the authority of the Matron of the Hospital, and will be subject to the rules of the Hospital.

4. They will be supplied at the cost of the Nightingale Fund, each with a separate bedroom in or near the Hospital, and with board, including tea and sugar, and washing; and they will be furnished with a certain quantity of outer clothing, of an uniform character, which they will always be required to wear when in the Hospital. They will serve as Assistant-Nurses in the wards of the Hospital.

5. They will receive instruction from the Sisters and the Resident Medical Officer. They will receive (in addition to the clothing, costing about 4*l.* 4*s.*) at the end of the 1st quarter, a sum of 2*l.*; at the end of the 2nd quarter, 2*l.* 10*s.*; at the end of the 3rd quarter, 2*l.* 10*s.*; and at the end of the 4th quarter, 3*l.*

6. The term of the Probationer's service is a complete year, and they will be received on the distinct understanding that they will remain for that length of time. They may, however, be allowed to withdraw upon grounds to be approved by the Committee. They will be subject to be discharged at any time by the Matron, in case of misconduct, or should she consider them inefficient or negligent of their duties. The Probationers will be eligible, upon proof of competency, during their year of training, or at its close, to permanent appointments as extra Nurses in St. Thomas's Hospital. The Committee have hitherto found immediate employment for their certified Nurses, either in St. Thomas's or some other Hospital or Infirmary, at salaries commencing at not less than 20*l.*, with board, including the usual extras and washing. Those Probationers, who by education and otherwise are properly qualified, may become Matrons or Superintendents.

7. At the close of a year, their training will be considered complete, *and they will be required to enter into service as Hospital Nurses in such situations as may from time to time be offered to them by the Committee.*

8. The names of the Probationers will be entered in a Register, in which a record will be kept of their conduct and qualifications. This will be submitted at the end of every month to the Committee of the Nightingale Fund. At the end of a year those whom the Committee find to have passed satisfactorily through the course of instruction and training will be entered in the Register as certified Nurses, and will be recommended for employment accordingly.

9. Nurses are not allowed to make engagements except through the Committee or with their approval, and are not to leave any situation without a month's notice to the Committee. The Committee do not exercise any control over the Nurse while in service,

10. The Committee will allow gratuities of 6*l.* and 4*l.*, according to two classes of efficiency, to all their certified Nurses, to be paid half at the end of the 2nd and half at the end of the 4th complete year of service succeeding the year of training, provided that evidence be given that the Nurse has served the whole period satisfactorily. The first gratuity will not be paid if the Committee have reason to suppose that the Nurse intends to discontinue her employment, and if paid will be forfeited, and must be repaid to the Committee in case she leaves service before the end of the 4th year.

The time for admission is at Midsummer and Christmas. Application should be made to Mrs. Wardroper, *St. Thomas's Hospital, Newington, Surrey, S.*,—if possible, personally; between 10 and 11 A.M.

No. 2*a*.

OBLIGATION.

At the expiration of one month from the date of entry, every Probationer will be required to write a letter to the following effect:—

To the CHAIRMAN of the COMMITTEE of the NIGHTINGALE FUND.

SIR,

HAVING now become practically acquainted with the duties required of an Hospital Nurse, I am satisfied that I shall be able and willing, on the completion of my year's training, to enter into service in a public Hospital or Infirmary, and I engage to continue in such service for the space of at least four years, in whatever situations the Committee shall think suitable to my abilities, it being my intention from henceforth to devote myself to Hospital employment. I further agree not to enter into any engagement without having first obtained the approval of the Committee, and not to leave any situation without having given due notice to the Committee.

I am, Sir, &c., &c.

No. 3.

Duties of Probationer under the "Nightingale Fund."

You are required to be—

Sober.	Quiet and Orderly.
Honest.	Cleanly and Neat.
Truthful.	Patient, Cheerful,
Trustworthy.	and Kindly.
Punctual.	

You are expected to become skilful—

1. In the dressing of blisters, burns, sores, wounds, and in applying fomentations, poultices, and minor dressings.
2. In the application of leeches, externally and internally.
3. In the administration of enemas for men and women.
4. In the management of trusses, and appliances in uterine complaints.
5. In the best method of friction to the body and extremities.
6. In the management of helpless patients, *i.e.*, moving, changing, personal cleanliness of, feeding, keeping warm, (or cool,) preventing and dressing bed sores, managing position of.
7. In bandaging, making bandages, and rollers, lining of splints, &c.
8. In making the beds of the patients, and removal of sheets whilst patient is in bed.
9. You are required to attend at operations.
10. To be competent to cook gruel, arrowroot, egg flip, puddings, drinks, for the sick.
11. To understand ventilation, or keeping the ward fresh by night as well as by day ; you are to be careful that great cleanliness is observed in all the utensils ; those used for the secretions as well as those required for cooking.
12. To make strict observation of the sick in the following particulars :—
    The state of secretions, expectoration, pulse, skin, appetite ; intelligence, as delirium or stupor ; breathing, sleep, state of wounds, eruptions, formation of matter, effect of diet, or of stimulants, and of medicines.
13. And to learn the management of convalescents.

No. 4.

Time Table for the Probationers under the "Nightingale Fund."

DAY.

Rise.	Breakfast.	Wards.	Dinner.	Wards.	Exercise.	Tea.	Wards.	Dormitory.	Supper.	Bed.
6 a.m.	6½ a.m.	7 a.m.	1 p.m.	2 p.m.	3½ to 5 p.m.	5 p.m.	6 p.m.	8½ p.m.	9 p.m.	10 p.m.

NIGHT.

Rise.	Tea.	Wards.	Dormitory.	Breakfast.	Wards.	Dormitory.	Exercise.	Dinner.	Bed.	
9 p.m.	9½ p.m.	10 p.m.	6 a.m.	6½ a.m.	7 a.m.	10 a.m.	11 a.m. to 1 p.m.	1 p.m.	2 p.m.	

During the Week, Prayers are read in the Wards at 8 a.m., and in the Dormitory at ¼ before 10 p.m.
On Sunday the Probationers are expected to attend Divine Service in the Parish Church, at 11 a.m.

By Order,

No. 5.

Name of Probationer. GENERAL REMARKS.

Section Date 186

Nature of Duty

Punctuality																
Quietness																
Trustworthy																
Personal neat and clean																
Ward management																
Dressings																
Leeching, external and internal																
Enemas, M. and F.																
Trusses																
Uterine appliances																
Rubbing																
Helpless patients																
Bandaging																
Making ditto																
Making beds																
Waiting on operations																
Sick cooking																
Keeping wards fresh																
Cleanliness of utensils																
Management of convalescents																
Observations on the sick																

No. 6.

Name of Probationer

Age at last birthday preceding her appointment - -

Single or married, or widow - -

Date of Appointment

By whom recommended

Names of Sisters under whom she has served - -

Religion

Nature of duty during the year - *No. of days* / *No. of nights*

Time off duty from illness during year - *Days* / *Hours*

Nature of such illness - -

MORAL CHARACTER DURING PROBATION.		
SOBRIETY.*	HONESTY {Especially as to taking petty bribes from patients.}	TRUTHFULNESS.*

* In each of these Columns state the Nurse's character (from the experience of the year or of any shorter period, if dismissed) positively; no degree admissible; the first dereliction ensures her dismissal.

MONTHLY STATE OF PERSONAL CHARACTER AND ACQUIREMENTS OF NURSE DURING HER PERIOD OF SERVICE.

Underneath the following Five Heads, state the Amount of Excellency or Deficiency, under the Three Degrees, "Excellent," "Moderate," "O."

The following degrees are to be used in each Monthly Entry:—"Excellent"—"Good"—"Moderate"—Imperfect"—"O."

—	1. PUNCTUALITY. Especially as to administration of food, wine, and medicine.	2. QUIETNESS.	3. TRUSTWORTHINESS.	4. PERSONAL NEATNESS AND CLEANLINESS.	5. WARD MANAGEMENT. (or Order.)	1. DRESSINGS. Blisters. Burns. Sores. Wounds. Fomentations. Poultices. Minor dressings.	2. APPLYING LEECHES. Externally. Internally.	3. ENEMAS. For men. For women.	4. MANAGEMENT OF TRUSSES, AND UTERINE APPLIANCES.	5. RUBBING. Body. Extremities.
January										
February										
March										
April										
May										
June										
July										
August										
September										
October										
November										
December										
*										

continued.

—	6. HELPLESS PATIENTS. Moving. Changing. Personal cleanliness of. Feeding. Keeping warm or cool. Preventing and dressing bed sores. Managing position of.	7. BANDAGING. Making bandages. " rollers. Lining of splints, &c.	8. Making beds. Removal of sheets.	9. WAITING ON OPERATIONS.	10. SICK COOKING. Gruel. Arrowroot. Egg flip. Puddings. Drinks.	11. KEEPING WARD FRESH. By night. " day.	12. CLEANLINESS OF UTENSILS. For cooking. " secretions.	13. MANAGEMENT OF CONVALESCENTS.	14. OBSERVATION OF THE SICK. Secretions. Expectoration. Pulse. Skin. Appetite. Intelligence, as delirium, stupor. Breathing. Sleep. State of wounds. Eruptions. Formation of matter. Effect of diet. " stimulants. " medicines. Signs of approaching death.	GENERAL REMARKS.
January										
February										
March										
April										
May										
June										
July										
August										
September										
October										
November										
December										
†										

* If defective, state nature of defect in this line

† [illegible] any duty in the columns in which the Nurse is pronounced excellent (E) or imperfect (I)

21.h.17(p).

16.

ANNO DECIMO QUARTO & DECIMO QUINTO

VICTORIÆ REGINÆ.

****

CAP. XXVIII.

An Act for the well-ordering of Common Lodging Houses. [24th *July* 1851.]

WHEREAS it would tend greatly to the Comfort and Welfare of many of Her Majesty's poorer Subjects if Provision were made for the well-ordering of Common Lodging Houses: Be it therefore enacted by the Queen's most Excellent Majesty, by and with the Advice and Consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the Authority of the same, as follows; to wit,

Short Title.

I. In citing this Act for any Purpose it shall be sufficient to use the Expression "The Common Lodging Houses Act, 1851."

Interpretation of Terms in this Act.

II. The following Words and Expressions in this Act have, for the Purposes and Execution of this Act, the following Meanings; to wit,

The Word "Place" includes County, Riding, Hundred, and other Division or Part of a County, City, Borough, Parish, District, and other Place whatsoever:

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The Word "Borough," and the Expressions "Mayor, Aldermen, and Burgesses," and "Borough Fund," have respectively the same Meaning as in the Act for the Regulation of Municipal Corporations:

The Expression "Improvement Act" means an Act for regulating and managing the Police of, and for draining, cleansing, paving, lighting, watching, and improving a Place, and an Act for any of those Purposes:

The Expression "Common Lodging House" includes, in any Case in which only a Part of a House is used as a Common Lodging House, the Part so used of such House.

By whom the Act is to be executed.

III. This Act shall be executed as follows; to wit,

1. Within and for all or any Part of the Metropolitan Police District, by "The Commissioners of Police of the Metropolis," or such One of them as is from Time to Time appointed in that Behalf by One of Her Majesty's Principal Secretaries of State:

2. Within and for all and any Part of any Place not being within the Metropolitan Police District, but being now or hereafter the District of a Local Board of Health, by the Local Board of Health for the District:

3. Within and for all and any Part of any other Place not being within the Metropolitan Police District, and not being the District of a Local Board of Health, but being now or hereafter an incorporated Borough regulated under the Act for the Regulation of Municipal Corporations, or any Act for the Amendment thereof, or any Charter granted in pursuance of any such Act, by the Mayor, Aldermen, and Burgesses of the Borough acting by the Council of the Borough:

4. Within and for all and any Part of any other Place not being within the Metropolitan Police District, and not being the District of a Local Board of Health, and not being such an incorporated Borough, but being now or hereafter the Place within the Limits of an Improvement Act, by the Commissioners, Trustees, or other Body, by whatever Name known, for executing the Improvement Act:

5. Within and for all and any Part of any other Place not being One of the Places herein-before specified, by the Justices of the Peace acting in Petty Sessions for the Place.

As to Expenses of executing this Act.

IV. The Expenses of and incident to the executing of this Act shall be borne and paid as follows; to wit,

1. With respect to the Metropolitan Police District, as Part of the general Expenses of executing the Acts for the Time being in force relating to the Metropolitan Police Force:

2. With

2. With respect to the District of a Local Board of Health, as Part of the Expenses of executing the Acts for the Time being in force relating to the Local Board of Health, and as charged upon and payable out of the Monies carried, under the Public Health Act, 1848, to the District Fund Account of the Local Board of Health:

3. With respect to an incorporated Borough, as Part of the Expenses of carrying into execution within the Borough the Provisions of the Act for the Regulation of Municipal Corporations, and as charged upon and payable out of the Borough Fund of the Borough:

4. With respect to a Place within the Limits of an Improvement Act, as Part of the general Expenses of executing that Act, and as charged upon and payable out of the Monies from Time to Time applicable for those Expenses:

5. With respect to a Place in which this Act is executed by Justices in Petty Sessions, as Part of the general Expenses of the Constablewick of the Place, and as charged upon and payable out of the Monies from Time to Time applicable for those Expenses:

And the Monies from Time to Time required for the Payment of the Expenses of and incident to the Execution of this Act shall be assessed, levied, raised, recovered, and paid accordingly.

Meaning of the Term "the local Authority."

V. The Expression in this Act "the local Authority" means, with respect to the Purposes and Execution of this Act with respect to any Place, the Body or Person by this Act authorized to execute with respect to the Place the several Provisions of this Act.

Notice of this Act to be given to the Keepers of Common Lodging Houses.

VI. Within Three Months after the passing of this Act the local Authority shall, and from Time to Time thereafter the local Authority may, give to the Keeper of every Common Lodging House already or hereafter within the Jurisdiction under this Act of the local Authority Notice in Writing of this Act, and shall give such Notice by leaving the same for such Keeper at the House, and shall by such Notice require the Keeper to register the House as by this Act provided, and such Notice may be in the Form in the Schedule to this Act annexed, or to the like Effect.

Registers of Common Lodging Houses to be kept.

VII. The local Authority shall keep a Register in which shall be entered the Names and Residences of the Keepers of all Common Lodging Houses within the Jurisdiction of the local Authority, and the Situation of every such House, and the Number of Lodgers authorized according to this Act to be received therein.

VIII. After

Common Lodging Houses.

Lodgers not to be received in Common Lodging Houses until registered under this Act.

VIII. After One Month after the giving of such Notice to register as by this Act provided, the Keeper of any Common Lodging House or any other Person shall not receive any Lodger in such House until the same has been inspected and approved for that Purpose by some Officer appointed in that Behalf by the local Authority, and has been registered as by this Act provided.

Power to local Authority to make Regulations respecting Common Lodging Houses.

IX. The local Authority may from Time to Time make Regulations respecting Common Lodging Houses within its Jurisdiction for all or any of the Purposes respecting the same for which the Local Board of Health are by the Public Health Act, 1848, authorized to make Byelaws, and for the well-ordering of such Houses, and for the Separation of the Sexes therein: Provided always, that the Regulations made under this Act by the local Authority shall not be in force until they have been confirmed by One of Her Majesty's Principal Secretaries of State.

Power to local Authority to impose Penalties for Offences committed against Regulations.

X. The local Authority shall have the same Power of imposing Penalties on Offenders against the said Regulations, subject to the same Restrictions, as the Local Board with respect to Offenders against such Byelaws, and such Penalties shall be recoverable in the same Way as is provided in the said Act with respect to the Penalties imposed on Offenders against such Byelaws; and a Copy of the said Regulations, purporting to be signed by the Secretary of State, and also to be signed by the local Authority, (or to be sealed with the Seal of the same, in case it have a Seal,) shall be receivable in Evidence of such Regulations, and of the duly making and confirming thereof.

Keepers of Common Lodging Houses to give Notice of Fever, &c. therein.

XI. The Keeper of a Common Lodging House shall, when a Person in such House is ill of Fever or any infectious or contagious Disease, give immediate Notice thereof to the local Authority, or some Officer of the local Authority, and also to the Poor Law Medical Officer and the Poor Law Relieving Officer of the Union or Parish in which the Common Lodging House stands.

As to Inspection of Common Lodging Houses.

XII. The Keeper of a Common Lodging House, and every other Person having or acting in the Care or Management thereof, shall, at all Times when required by any Officer of the local Authority, give him free Access to such House or any Part thereof.

As to cleansing of Common Lodging Houses.

XIII. The Keeper of a Common Lodging House shall thoroughly cleanse all the Rooms, Passages, Stairs, Floors, Windows, Doors, Walls, Ceilings, Privies, Cesspools, and Drains thereof, to the Satisfaction of and so often as shall be required by or in accordance with any

any Regulation or Byelaw of the local Authority, and shall well and sufficiently, and to the like Satisfaction, limewash the Walls and Ceilings thereof in the First Week of each of the Months of *April* and *October* in every Year.

Penalty for Offences against this Act.

XIV. If the Keeper of a Common Lodging House, or any other Person having or acting in the Care or Management thereof, offend against any of the Provisions of this Act, or any of the Byelaws or Regulations made in pursuance of this Act, or if any Person in any Common Lodging House be confined to his Bed for Forty-eight Hours by Fever or any infectious or contagious Disease, without the Keeper of such House giving Notice thereof as required by this Act, every Person so offending shall for every such Offence be liable to a Penalty not exceeding Five Pounds, and to a further Penalty not exceeding Forty Shillings for every Day during which the Offence continues: Provided always, that this Act shall not exempt any Person from any Penalty or other Liability to which he may be subject irrespective of this Act.

Recovery of Penalties.

XV. The Clauses and Provisions of the Railways Clauses Consolidation Act, 1845, "with respect to the Recovery of Damages "not specially provided for, and of Penalties, and to the Determina- "tion of any other Matter referred to Justices," are for the Purposes and Execution of this Act incorporated with this Act.

General Powers of local Authority, &c.

XVI. The local Authority, and all Justices, Constables, and others, shall respectively have full Jurisdiction, Powers, Authorities, and Indemnities for executing the several Provisions of this Act; and the Restrictions of the Public Health Act, 1848, as to the Hours within which Common Lodging Houses may be entered by Persons authorized by a Local Board of Health, shall not apply to this Act.

Act not to extend to the City of London;

XVII. That this Act shall not extend to the City of *London* or the Liberties thereof.

nor to Scotland.

XVIII. That nothing in this Act shall extend to *Scotland*.

SCHEDULE.

FORM OF NOTICE.

TAKE notice, That on the [ ] Day of [ ] an Act called "The Common Lodging Houses Act, 1851," was passed, and that before the [ ] Day of [ ] you, being the Keeper of a Common Lodging House within [*here state the Place over which the Jurisdiction of the local Authority giving the Notice extends*], must have your Common Lodging House registered, and that the Register is to be kept at [*here state where the Register is to be kept*], and that if you do not have your Common Lodging House so registered you will be liable to a Penalty not exceeding Five Pounds for every Lodger whom you receive in your Common Lodging House while it is not so registered; and that on your applying to [*here give the Name and Address of the Person to keep the Register*] he will register your Common Lodging House free of all Charge to you. Dated [*&c.*]

LONDON:
Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1858.

21. h. 17 (9).

17.

ANNO DECIMO SEXTO & DECIMO SEPTIMO

VICTORIÆ REGINÆ.

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C A P. XLI.

An Act for making further Provisions with respect to Common Lodging Houses. [4th *August* 1853.]

WHEREAS it is expedient to extend the Provisions of "The Common Lodging Houses Act, 1851:" Be it therefore enacted by the Queen's most Excellent Majesty, by and with the Advice and Consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the Authority of the same, as follows:

Short Title.

I. This Act may be cited for any Purpose as "The Common Lodging Houses Act, 1853."

Recited Act and this Act to be as One.

II. The Common Lodging Houses Act, 1851, and this Act shall be construed and executed as if they were One Act.

All Common Lodging Houses to be registered before being used, and to be kept only by registered Keepers.

III. After Three Months after the passing of this Act a Person shall not keep a Common Lodging House or receive a Lodger therein until the House have been inspected and approved for that Purpose by some Officer appointed in that Behalf by the local Authority, and have been registered as by the recited Act provided; and a Person shall not keep a Common Lodging House unless his Name as the Keeper thereof be entered in the Register kept under the recited Act: Provided always, that when the Person so registered dies, his Widow or any Member of his Family may keep the House as a Common Lodging House for not more than Four Weeks after his Death without being registered as the Keeper thereof.

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T.C.M.H.B.

Local Authority may refuse to register Houses, if Keepers do not produce Certificate of Character.

IV. The local Authority may refuse to register as the Keeper of a Common Lodging House a Person who does not produce to the local Authority a Certificate of Character in such Form as the local Authority shall direct, signed by Three Inhabitant Householders of the Parish respectively rated to the Relief of the Poor of the Parish within which the Lodging House is situate for Property of the yearly rateable Value of Six Pounds or upwards.

Evidence of Register.

V. A Copy of an Entry made in a Register kept under the recited Act, certified by the Person having the Charge of the Register to be a true Copy, shall be received in all Courts and before all Justices and on all Occasions whatsoever as Evidence, and be sufficient Proof of all Things therein registered, without Production of the Register or of any Document, Act, or Thing on which the Entry is founded; and every Person applying at a reasonable Time shall be furnished gratis by the Person having such Charge with a certified Copy of any such Entry.

Power to Local Authority to require an additional Supply of Water to Common Lodging Houses.

VI. When it appears to the local Authority that a Common Lodging House is without a proper Supply of Water for the Use of the Lodgers, and that such a Supply can be furnished thereto at a reasonable Rate, the local Authority may by Notice in Writing require the Owner or Keeper of the Common Lodging House, within a Time specified therein, to obtain such Supply, and to do all Works necessary for that Purpose; and if the Notice be not complied with accordingly, the local Authority may remove the Common Lodging House from the Register until it be complied with.

As to Removal of sick Persons from Common Lodging Houses to Hospitals, &c.

VII. When a Person in a Common Lodging House is ill of Fever or any infectious or contagious Disease the local Authority may cause such Person to be removed to an Hospital or Infirmary, with the Consent of the Authorities thereof, and on the Certificate of the Medical Officer of the Parish, Place, or District that the Disease is infectious or contagious, and that the Patient may be safely removed, and may, so far as the local Authority think requisite for preventing the Spread of Disease, cause any Clothes or Bedding used by such Person to be disinfected or destroyed, and may, if the local Authority think fit, award to the Owners of the Clothes and Bedding so disinfected or destroyed reasonable Compensation for the Injury or Destruction thereof, and such Compensation shall be paid to such Owners by the proper Officer of the Parish or Union in which the Common Lodging House is situate, out of the Rates applicable to the Relief of the Poor of such Parish, the Amount of such Compensation being first certified in Writing upon a List of such Articles.

Power to order Reports from Keepers of Common

VIII. The Keeper of a Common Lodging House in which Beggars or Vagrants are received to lodge, or other Person having the Care or Management thereof, shall from Time to Time, if required by any Order of the local Authority served on such Keeper or Person, report

report to the local Authority, or to such Person or Persons as the said local Authority shall direct, every Person who resorted to such House during the preceding Day or Night, and for that Purpose Schedules shall be furnished by the local Authority to the Persons so ordered to report, which Schedules they shall fill up with the Information required, and transmit to the local Authority.

Lodging Houses kept for Beggars and Vagrants.

IX. The Town Council, Trustees, Commissioners, Guardians, and other Officers and Boards specified in the First Section of the "Nuisances Removal and Diseases Prevention Act, 1848," shall, on the Receipt of a Certificate of any Police Constable or of any Officer appointed for the Inspection of Common Lodging Houses by the local Authority, stating the Existence in or about any Common Lodging House of any of the Causes of Complaint specified in that Section, take all such Proceedings as by that Section are required to be taken by the Town Council, Trustees, Commissioners, Guardians, and other Officers and Boards specified therein on a Notice signed by Two Inhabitant Householders, and in like Manner as nearly as may be as if such Notice had been given; and the local Authority shall have the like Powers, and shall take all such Proceedings, on Receipt of any such Certificate of the Existence of any such Cause of Complaint, as the Town Council, Trustees, Commissioners, Guardians, and other Officers or Boards have and are empowered and required to take under the Provisions of that Act.

Power to Town Councils, &c. to remove Causes of Complaint certified under Nuisances Removal, &c. Act.

X. Provided always, notwithstanding any Provision contained in this Act, That within the City of *Oxford*, or the Parts within the Jurisdiction of the Commissioners for amending certain Mileways leading to *Oxford*, and making Improvements in the University and City of *Oxford*, the Suburbs thereof, and the adjoining Parish of *Saint Clement*, (which Commissioners are herein-after called the *Oxford* Commissioners,) the several Powers and Duties assigned by this Act to any local Authority shall, in so far as they are consistent with the Laws under which the said *Oxford* Commissioners act, be exercised by the said *Oxford* Commissioners; and within the Borough of *Cambridge*, or the Parts within the Jurisdiction of the Commissioners acting under an Act of the Thirty-fourth Year of the Reign of King *George* the Third, for amending and enlarging the Powers of a former Act of the same Reign, for the better paving, cleansing, and lighting the Town of *Cambridge*, for removing and preventing Obstructions and Annoyances, and for widening the Streets, Lanes, and other Passages within that Town, (which Commissioners are herein-after called the *Cambridge* Commissioners,) the several Powers and Duties aforesaid shall, in so far as they are consistent with the Laws under which the said *Cambridge* Commissioners act, be exercised by the *Cambridge* Commissioners.

The Oxford Commissioners and the Cambridge Commissioners to act as the local Authority under this Act.

XI. The

As to Offences against this Act.

XI. The Fourteenth Section of the recited Act extends to Offences against any of the Provisions of this Act, so as to render the Offenders liable to the Penalties therein expressed, and any Person convicted of any Offence against the recited Act and this Act, or either of them, may, in default of Payment of the Penalty imposed, be imprisoned for any Term not exceeding Three Months in the Manner provided by Law in that Behalf.

Conviction for Third Offence to disqualify Persons from keeping Common Lodging House.

XII. Where a Keeper of a Common Lodging House, or a Person having or acting in the Care or Management of a Common Lodging House, is convicted of a Third Offence against the recited Act and this Act, or either of them, the Justices before whom the Conviction for such Third Offence takes place may, if they think fit, adjudge that he shall not at any Time within Five Years after the Conviction, or within such shorter Period after the Conviction as the Justices think fit, keep or have or act in the Care or Management of a Common Lodging House without the previous Licence in Writing of the local Authority, which Licence the local Authority may withhold or may grant on such Terms and Conditions as they think fit.

Acts may be executed by Justices at Petty Sessions.

XIII. In a Case in which there are not Petty Sessions for a Place fifthly mentioned in Section Three of the recited Act, that Act and this Act may be executed within and for all and any Part of such Place by the Justices of the Peace acting in Petty Sessions in the Petty Sessional Division within which such Place is comprised.

As to expenses of executing Act by Justices.

XIV. Where in any Place the recited Act and this Act are executed by Justices in Petty Sessions, the Expenses of and incident to the executing of the recited Act and this Act with respect to such Petty Sessional Division shall be borne by and paid out of the Rates for the Relief of the Poor of the several Parishes or other Places comprised therein in which any Common Lodging House is situate (except so far as there are other Monies applicable to the Purpose), and the Amount of such Expenses shall be ascertained and apportioned by such Justices, and shall be paid accordingly as they order.

LONDON:
Printed by George Edward Eyre and William Spottiswoode,
Printers to the Queen's most Excellent Majesty. 1853.

21.h.17(r).

26 *February* 1863. 26 Vict.

18

A

BILL

TO

Regulate the Removal in hired or public Carriages of Persons labouring under infectious Diseases in the Metropolis.

WHEREAS an Act was passed in the Twenty-fourth Year of the Reign of Her most Gracious Majesty, Chapter Seventy-seven, intituled "An Act to amend the Acts for "the Removal of Nuisances and the Prevention of Diseases," whereby it was, among other things, enacted, that it should be lawful for the local Authority for the executing the "Diseases Prevention Act" to procure and maintain a Carriage or Carriages suitable for the Conveyance of Persons suffering under any infectious or contagious Disease as in the said recited Act more particularly mentioned; and the Provisions of the said Act have been found insufficient within the Metropolis to prevent the Conveyance of Persons so suffering in public Vehicles plying for Hire, and such Persons are conveyed in the said Vehicles, to the great Danger and Peril of Her Majesty's Subjects thereafter using such Vehicles; and it is expedient to make other and better Provision for preventing such Practice: Be it therefore enacted by the Queen's most Excellent Majesty, by and with the Advice and Consent of the Lords Spiritual and Temporal, Preamble.

and

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and Commons, in this present Parliament assembled, and by the Authority of the same, as follows:

Carriages to be provided.

1. Every local Authority executing the Diseases Prevention Act within any Part of the City of London or the Metropolitan Police District shall, within *One Month* after the passing of this Act, provide and for ever thereafter maintain such and so many Carriages suitable in all respects for the Purpose of being used for the Conveyance of Persons suffering under infectious or contagious Diseases, so that the same shall be ready and available at all reasonable Times for the Use of those who may require the same, and shall at all Times hereafter provide suitable and necessary Appliances to enable such Conveyances to be used; and such Carriages shall be kept in such convenient Place or Places as the said local Authorities may appoint, so as to be conveniently accessible to all the Inhabitants of the District for which such Authority acts.

Rates to be fixed.

2. It shall be lawful for such local Authority, if they shall so think fit, to fix for the Conveyance of any Person in One of such Carriages such Charge as they may deem right, not exceeding the Amount now allowed by Law to be charged by the Owner of a Vehicle licensed to ply for Hire within the said District.

Penalty for using Hackney Carriage for Removal of any Person suffering from infectious or contagious Disease.

3. From and after the *passing of this Act* if any Person shall hire, use, or employ, or cause to be hired, used, or employed, any Hackney Carriage plying within the Metropolitan District for the Removal of any Person whom he shall know or have reasonable Cause to believe to be suffering from any infectious or contagious Disease whatsoever, or shall personally aid, assist, or abet any other Person in hiring, using, or employing any such Hackney Carriage, every such Person, on summary Conviction thereof, shall forfeit and pay a Penalty not exceeding *Ten Pounds*.

Not necessary to prove the Disease under which such Person was suffering.

4. It shall not be necessary upon the hearing of any Charge of such Offence having been committed, in any such Conviction or Record of Conviction to state or prove the Disease under which such Person was suffering, but it shall be sufficient to allege and show that such Person was suffering from Disease, and the Person using or employing the Hackney Carriage knew or had Reason to believe that such Disease was infectious or contagious.

One Half of Penalty to be paid to Informer.

5. *The Half* of the Penalty imposed upon Conviction of any Offence against this Act shall be paid to the Person giving Information of same.

6. All

6. All Proceedings against any Person for an Offence under this Act shall be taken in accordance with the Provisions of an Act passed in the Tenth Year of the Reign of His late Majesty King George the Fourth, intituled "An Act for improving the Police in "and near the Metropolis," and the several Acts amending the same; and all the Provisions of the said Acts relating to summary Convictions shall be applicable to Convictions under this Act, so far as the same may be reasonably capable of being applied thereto. Proceedings to be taken under 10 G. 4. c. 44.

7. In this Act, and in any Conviction or Proceeding under it, the Word "infectious" shall include "contagious," and every contagious Disease shall be deemed to be infectious for the Purpose of this Act. Interpretation.

8. This Act may be intituled "The Diseases Prevention Act, 1863." Short Title.

9. This Act and the said recited Act of the Twenty-fourth Year of Her Majesty's Reign, Chapter Seventy-seven, shall be read together as One Act. This Act and recited Act to be read together.

Diseases Prevention (Metropolis).

A

BILL

To regulate the Removal in hired or public Carriages of Persons labouring under infectious Diseases in the Metropolis.

(*Prepared and brought in by Dr. Brady and Sir FitzRoy Kelly.*)

Ordered, by The House of Commons, *to be Printed,* 26 *February* 1863.

[Bill 41.]

Under 1 *oz.*

21. h. 17 (5).

19.

ANNO TRICESIMO

VICTORIÆ REGINÆ.

****

C A P. VI.

An Act for the Establishment in the Metropolis of Asylums for the Sick, Insane, and other Classes of the Poor, and of Dispensaries; and for the Distribution over the Metropolis of Portions of the Charge for Poor Relief; and for other Purposes relating to Poor Relief in the Metropolis. [29th *March* 1867.]

BE it enacted by the Queen's most Excellent Majesty, by and with the Advice and Consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the Authority of the same, as follows:

Preliminary.

1. This Act may be cited as The Metropolitan Poor Act, 1867. Short Title.

2. In this Act— Interpretation of Terms.

The Term "the Poor Law Acts" means the Act of the Session of the Fourth and Fifth Years of King *William* the Fourth (Chapter Seventy-six) "for the Amendment and better Ad-

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TOMHS

" ministration of the Laws relating to the Poor in *England* " and *Wales*," and the Acts extending or amending the same:

The Term " the Poor Law Amendment Act of 1844 " means the Act of the Session of the Seventh and Eighth Years of Her Majesty's Reign (Chapter One hundred and one) " for the " further Amendment of the Laws relating to the Poor in " *England*."

Words in this Act have the same Meaning as in the Poor Law Acts.

Limitation of Act to the Metropolis.

3. This Act extends only to Unions and Parishes not in Union which are wholly or for the greater Part thereof respectively included in the Metropolis as defined by The Metropolis Management Act, 1855; and in this Act the Term " the Metropolis " means the Metropolis as so defined.

Orders of Poor Law Board.

4. Any Order of the Poor Law Board under this Act shall not be deemed a General Order within the Operation of the Poor Law Acts, although addressed to more than One Union or Parish.

District Asylums.

Asylums to be provided.

5. Asylums to be supported and managed according to the Provisions of this Act may be provided under this Act for Reception and Relief of the Sick, Insane, or Infirm, or other Class or Classes of the Poor chargeable in Unions and Parishes in the Metropolis (and in this Act the Term " Asylum " means an Asylum provided under this Act).

Formation of Districts.

6. In order to the Provision of Asylums, the Poor Law Board may from Time to Time by Order combine into Districts, Unions or Parishes, or Unions and Parishes, in the Metropolis, as they think fit, and may from Time to Time alter any such District by Addition, Sub-division, Separation of Part or otherwise (and in this Act the Term " the District " means, in relation to each Asylum, the District for which that Asylum is for the Time being provided).

Number of Asylums.

7. For each District there shall be an Asylum or Asylums, as the Poor Law Board from Time to Time by Order direct.

Managers of Asylums.

8. For the Asylum or Asylums of each District there shall be a Body of Managers constituted as in this Act provided, which Managers and their Successors are hereby incorporated by the Name of The Managers of the Asylum District, and by that Name shall be One Body Corporate, with perpetual Succession and a Common Seal, and with Power, subject and according to the Orders of the Poor Law Board, to take, hold, and

and dispose of Lands and other Property for Purposes of the Asylum District (and in this Act the Term "the Managers" means, in relation to each Asylum District, the Managers thereof for the Time being).

Constitution of Managers.

9. The Managers shall (subject to the Provisions of this Act) be partly elective and partly nominated.

Election of Managers.

10. Elective Managers shall be from Time to Time elected by the Guardians of each of the several Unions and Parishes forming the District from among themselves, or from among Ratepayers qualified to be Guardians therein, or partly from one and partly from the other.

Nomination of Managers.

11. Nominated Managers shall be from Time to Time nominated by the Poor Law Board from among Justices of the Peace for any County or Place resident in the District, or from among Ratepayers resident in the District and assessed to the Poor Rate therein on an annual rateable Value of not less than Forty Pounds, or partly from one and partly from the other.

Number, Qualifications, &c. of Managers.

12. The Poor Law Board shall from Time to Time by Order prescribe the total Number of the Managers, and the Proportion of the Elective and Nominated Managers (but so that the prescribed Number of the Nominated Managers do not ever exceed One Third of the prescribed Number of the Elective Managers), the Number of Elective Managers to be elected for each Union or Parish in the District, the Qualifications of the Managers, their Tenure of Office, the Mode and Times of Election, and the Quorum for their Meetings.

Validity of Acts of Managers notwithstanding Vacancies.

13. Any Act or Proceeding of the Managers shall not be invalid by reason only of any Vacancy in their Body, or by reason only of any Failure to elect or nominate or any Defect or Irregularity in or about the Election or Nomination of any Person to be Manager, or by reason only of the Want of Qualification or Disqualification of any Person acting as Manager; and the Managers shall be deemed lawfully constituted, and shall act, notwithstanding any such Vacancy, Failure, Defect, Irregularity, Want of Qualification, or Disqualification.

Prohibition against Managers being concerned in Contracts..

14. The Provisions of the Poor Law Acts imposing Penalties on Guardians and their Officers if concerned for their own Profit in providing or in any Contract for the supplying of anything for the Use of Workhouses or otherwise for the Support or Maintenance

tenance of the Poor, and all Remedies for Recovery of such Penalties, shall extend and apply to the Managers and their Officers.

Building for Asylum.

15. The Poor Law Board may from Time to Time by Order direct the Managers to purchase or hire, or to build, and (in either Case) to fit up a Building or Buildings for the Asylum, of such Nature and Size, and according to such Plan, and in such Manner, as the Poor Law Board think fit, and the Managers shall carry such Directions into execution.

As to the Purchase or Hiring of Lands, &c. by Managers.

16. The Managers shall have for the Purposes of the Asylum the like Powers as are for the Time being vested in Guardians of Unions or Parishes in the Metropolis relative to the Purchase or Hiring of Lands or Buildings; but the Consent of any Ratepayers or Owners of Property in a Union or Parish shall not be necessary with respect to any Sale, Lease, or other Disposition of any Workhouse, Building, or Land by Guardians or Overseers to the Managers.

Power to borrow Money for Purposes herein named.

17. The Managers may borrow Money for purchasing Lands or Buildings, and for building, fitting up, and furnishing Buildings erected or hired for the Asylum, according to the Provisions of the Poor Law Acts under which Guardians are for the Time being empowered to borrow Money, and may charge the Poor Rates of the Unions and Parishes forming the District with the Money so borrowed, and Interest, subject and according to the following Provisions:

(1.) The Amount borrowed shall not exceed One Third of the aggregate annual Expenditure on the Relief of the Poor within the whole District (exclusive of Reimbursements) for the Period of Three Years ending on the Twenty-fifth Day of *March* next preceding the borrowing of the Money:

(2.) The Amount borrowed shall be charged on the Poor Rates of the several Unions and Parishes forming the District in the Proportions in which they contribute to the Maintenance of the Asylum:

(3.) The Amount borrowed shall be paid off, with Interest, by equal annual Instalments not exceeding Twenty.

Adaptation of existing Workhouses for Asylums.

18. The Poor Law Board may by Order direct that any Building for the Time being in use as a Workhouse be, with such Alterations as the Poor Law Board think fit, used for the Asylum, and thenceforth that Building shall be for the common Use of the District accordingly; and an annual Sum in the nature of Rent or other Compensation of such Amount as the Poor Law Board from Time to Time direct shall be paid to the Guardians of the Union or Parish to which such Building belongs, as long as the same continues to be so used.

19. If

Reimbursement to Managers of Expenditure.

19. If in any such Case the Managers expend any Money in the Improvement or Enlargement of the Building, or the providing of substantial Fittings therein, and afterwards relinquish the Use thereof, the Poor Law Board may, if they think fit, make an Adjustment in respect of that Expenditure between the Owners of the Building and the Managers, and direct such Amount as they think equitable to be reimbursed to the Managers by the Owners of the Building, to be paid at once or by Instalments as the Poor Law Board direct.

Furniture, &c. for Asylum.

20. The Managers shall from Time to Time provide for the Asylum necessary Fixtures, Furniture, and Conveniences, and such as the Poor Law Board from Time to Time by Order direct.

Mode of Admission into Asylum.

21. The Mode of Admission of Persons into the Asylum shall be such as the Poor Law Board from Time to Time by Order direct.

Powers and Duties of Managers in respect of Inmates.

22. The Managers shall have the like Powers as Guardians for the Relief, Maintenance, and Management of the Inmates of the Asylum, and shall from Time to Time provide such Medicines, Appliances, and Requisites for the Medical and Surgical Care and Treatment of the Inmates, and cause the same to be furnished and used according to such Rules, as the Poor Law Board from Time to Time by Order direct.

Application of Parts of 7 & 8 Vict. c. 101. as herein named.

23. The following Provisions of the Poor Law Amendment Act of 1844 shall extend to the Asylum as if it were an Asylum under that Act or a Workhouse, and as if the Managers were a District Board under that Act, that is to say,—

So much of Section Forty-three as relates to Rules of the Poor Law Board for Government of the Asylum or its Inmates, and to religious Assistance and Instruction:

Sections Fifty, Fifty-four, Fifty-seven, and Fifty-nine.

Chargeability, &c. of Inmates.

24. With reference to Chargeability, Burial, and other Incidents, the Asylum shall in relation to each Inmate thereof be deemed to be in the Union or Parish from which such Inmate is sent; but Births and Deaths in the Asylum shall be registered by the Registrar in whose District the Asylum is situate.

Appointment, &c. of paid Officers.

25. The Managers shall have the like Powers as Guardians for the Appointment, Control, and Payment of paid Officers of the Asylum, and the Grant of Superannuation Allowances to them.

The Duties, Number, and Salaries of the paid Officers, and the Securities to be given by them, shall be such as the Poor Law Board may from Time to Time approve or by Order direct.

Enforcement of Orders of Managers.

26. Legal and reasonable Orders of the Managers shall be obeyed, and Obedience thereto shall be enforced, in like Manner and by and under like Remedies and Penaltics as legal and reasonable Orders of Guardians.

Committees of Managers.

27. The Managers may from Time to Time, subject and according to such Regulations as the Poor Law Board from Time to Time by Order prescribe, appoint Committees of Members of their Body, and delegate to them any of the Powers of the Managers.

Orders of Poor Law Board as to Managers.

28. The Managers shall, in the Exercise and Discharge of all their Powers and Duties, be subject to Orders of the Poor Law Board in like Manner as Guardians are under the Poor Law Acts.

Use of Asylums as Medical Schools.

29. Where the Asylum is provided for Reception and Relief of the Sick or Insane it may be used for Purposes of Medical Instruction, and for the training of Nurses, in such Cases and Manner and subject to such Regulations as the Poor Law Board from Time to Time by Order direct.

Representative of Commissioners in Lunacy.

30. Where the Asylum is provided for Reception and Relief of the Insane the Commissioners in Lunacy may, if they think fit, depute one of their Body or appoint from Time to Time a special Commissioner, and the Person so deputed or appointed shall be entitled to attend Meetings of the Managers and to take part in their Proceedings, but not to vote; and every such Asylum shall be considered as a Workhouse within the Meaning of the Lunacy Acts as defined by the Twenty-fifth and Twenty-sixth *Victoria*, Chapter One hundred and eleven.

Expenses of providing Asylum and Salaries.

31. Expenses incurred by the Managers in or about the purchasing, hiring, building, repairing, and fitting up of Buildings for the Asylum, and any Sum in the Nature of Rent or other Compensation, payable by the Managers to Guardians, in respect of the Use for the Asylum of a Building previously used as a Workhouse, and Expenses incurred by the Managers in or about the providing of Fixtures, Furniture, Conveniences, Medicines, medical and surgical Appliances, and other Necessaries required for keeping the Asylum in proper Order for daily Use, and the Salaries and Maintenance of the Officers thereof, shall be defrayed by Contributions from the Unions and Parishes forming the District.

Charges for Maintenance, &c.

32. Expenses incurred by the Managers in or about the Food, Clothing, Maintenance, Care, Treatment, and Relief, or for the Burials, of Inmates of the Asylum shall be separately charged to the respective Unions or Parishes from which the Inmates of the Asylum are sent.

33. The

Metropolitan Poor.

Audit of Accounts.

33. The Poor Law Board shall appoint some Person to be the Auditor of the District, who shall audit the Accounts of the Managers and of their Officers; and those Accounts shall accordingly be prepared for and submitted to the Auditor at such Times and in such Manner as the Accounts of Guardians of Unions are by the Poor Law Acts required to be prepared and submitted.

Powers of Auditor.

34. The Auditor shall have the like Powers of allowing and disallowing Accounts, and of making Surcharges therein, as Auditors appointed under the Poor Law Acts have for the Time being; and Sums disallowed, reduced, or surcharged in the Accounts submitted to the Auditor shall be recoverable in like Manner as under the Poor Law Acts; and there shall be the like Appeal to the Court of Queen's Bench or to the Poor Law Board against an Allowance, Disallowance, or Surcharge made by the Auditor, as in case of the Audit of Union or Parish Accounts.

Circulation of Abstract of Accounts.

35. Within One Month after each Audit the Managers shall deliver, by Post or otherwise, to each Board of Guardians in the District a printed Abstract (in a Form from Time to Time prescribed by the Poor Law Board) of the Accounts as audited.

Remuneration of Auditor.

36. The Remuneration of the Auditor shall from Time to Time be fixed by the Poor Law Board by Order, and, with his Expenses, shall be paid as the Salaries and Expenses of Auditors appointed under the Poor Law Acts are for the Time being payable.

Removal and new Appointment of Auditor.

37. The Poor Law Board may remove an Auditor as they think fit, and on a Vacancy shall appoint a qualified Person to fill the Vacancy; and the Powers of providing temporarily for a Vacancy, and of appointing a Substitute or a Deputy, given by the Poor Law Acts in relation to Auditors thereunder, shall apply in relation to an Auditor under this Act.

Medical Out-door Relief.

Building for Dispensary.

38. The Poor Law Board may from Time to Time, by Order, direct the Guardians of a Union or Parish in the Metropolis to provide a Dispensary or Dispensaries for such Union or Parish, and to purchase or hire, or to build, and (in either Case) to fit up and furnish a Building or Buildings for that Purpose, of such Nature and Size, and according to such Plan, and in such Manner as the Poor Law Board think fit, or to set apart, adapt, fit up and furnish for that Purpose such Part of the Workhouse of the Union or Parish, according to such Plans, and in such Manner, as the Poor Law

Law Board think fit, and the Guardians shall act accordingly; and, where the Poor Law Board by Order so direct, the Guardians may borrow the Amount requisite in that Behalf, in like Manner and subject to the like Conditions as in the Case of the building of a Workhouse.

Dispensary Committee.

39. There shall be a Committee of Management for the Dispensary or Dispensaries in each Union or Parish, to be called the Dispensary Committee for the Union or Parish (and in this Act the Term "the Dispensary Committee" means, in relation to each Union Parish, the Dispensary Committee for the same for the Time being).

Election of Committee.

40. The Dispensary Committee shall be elected by the Guardians of the Union or Parish from among themselves, or from among Ratepayers of the Union or Parish assessed to the Poor Rate on an annual rateable Value of not less than Forty Pounds, or partly from one and partly from the other.

Number, &c. of Committee.

41. The Poor Law Board shall from Time to Time prescribe with respect to each Committee the Number and Tenure of Office of the Members, the Mode and Times of Election, and the Quorum for their Meetings.

Places for seeing Sick Poor, &c.

42. The Guardians of each Union or Parish providing a Dispensary shall also provide, according to the Directions of the Poor Law Board, proper Places where the Medical Officers of the Union or Parish may see such of the Sick Poor as attend there for Advice, and where Meetings of the Dispensary Committee may be held.

Appointment of Dispensers, &c.

43. The Dispensary Committee shall from Time to Time appoint and shall at all Times keep appointed proper Persons to be Dispensers of Medicine at the Dispensaries for the Union or Parish, and may from Time to Time appoint such other Officers and such Servants for the Purposes of those Dispensaries as they think fit.

The Duties, Qualifications, Number, and Salaries of the Dispensers, Officers, and Servants shall be such as the Poor Law Board may from Time to Time approve or by Order direct.

Provision and dispensing of Medicines, &c.

44. The Guardians of each Union or Parish providing a Dispensary shall from Time to Time, on the Requisition of the Dispensary Committee, provide proper Medicines and Appliances and Requisites for the Care and Surgical Treatment of the Sick Poor of the Union or Parish relieved out of the Workhouse, and the same shall be dispensed and furnished to such of the Poor entitled to Relief as require the same, on the Prescription or written Direction of the District Medical Officer, subject to such Regulations as the Poor Law Board from Time to Time by Order direct.

45. The

Metropolitan Poor.

Appointment of District Medical Officers.

45. The District Medical Officers for a Union or Parish shall be from Time to Time appointed by the Dispensary Committee, subject to the Rules and Orders of the Poor Law Board respecting Appointment and Removal of Officers under the Poor Law Acts; but the District Medical Officers in Office at the Time of the Dispensary Committee entering on their Duties shall continue in Office as if this Act had not been passed, subject nevertheless to such Modifications of Arrangements respecting their Duties and Remuneration, made with them before the passing of this Act, as the Poor Law Board think fit.

Modification of Districts, Salaries, and Contracts with District Medical Officers.

46. For giving Effect to the Provisions of this Act relating to Medical Relief out of the Workhouse, the Poor Law Board may from Time to Time vary as they think fit Medical Districts, Salaries, and Contracts with District Medical Officers, existing at the passing of this Act or at any Time thereafter.

District and Separate Schools.

Certain Provisions as to Charge of Expenses of Buildings, &c. as in 7 & 8 Vict. c. 101. s. 47. 13 & 14 Vict. c. 11. repealed.

47. So much of Section Forty-seven of the Poor Law Amendment Act of 1844 and of the Act of the Session of the Thirteenth and Fourteenth Years of Her Majesty's Reign (Chapter Eleven), "to make better Provision for the Contributions of Unions and "Parishes in School Districts to the Common Funds of the respec- "tive Districts," as provides for Payment by Unions as therein mentioned of Expenses incurred by any District Board in the Purchase or Hire of any Land or Buildings for a School, or in erecting, repairing, adding to, or fitting up any Building, and the Salaries of the Officers and Servants of the Establishment, and other common Charges of the School, shall, from the Twenty-ninth Day of *September* next, as far as those Provisions relate to a District in the Metropolis, be repealed; but this Repeal shall not affect the Mode of Payment of any such Expenses or Salaries incurred or accrued due up to that Day inclusive, or the Payment of any Mortgage or other Debt incurred by any District Board in respect thereof, or the Validity or Effect of any Mortgage or Security given by any District Board for any such Debt; and all such Expenses and Salaries, and every such Debt, shall be paid and remain charged as if this Act had not been passed.

Charges for Buildings and Salaries of Officers of District Schools.

48. Expenses incurred by a District Board constituted under the Poor Law Amendment Act of 1844 for the Maintenance of a District School for a District in the Metropolis in the Purchase or Hire of Land or Buildings for the School, and the Salaries of Officers, and all other common Charges of such School, shall, from the said Twenty-ninth Day of *September* next, be defrayed by Con-

tributions from the Unions and Parishes forming the District, as in this Act provided.

Addition of nominated Members to District Board.

49. The Poor Law Board may from Time to Time nominate to be Members of such a District Board such Persons as they think fit from among Justices of the Peace for any County or Place resident in the District of the School, or from among Ratepayers resident in that District, and assessed to the Poor Rate therein on an annual rateable Value of not less than Forty Pounds, or partly from one and partly from the other, but so that the Number of Members so nominated do not ever exceed One Third of the full Number of the elected Members of the Board.

Workhouses for Classes of Poor.

Reception in Workhouses of Poor belonging to other Unions or Parishes.

50. Where, in the Opinion of the Poor Law Board, the Workhouse of a Union or Parish in the Metropolis is adapted only for the Reception of poor Persons of a particular Class or particular Classes, but is capable of accommodating poor Persons of that Class or those Classes from any other Union or Parish within the Metropolis, the Poor Law Board may by Order direct the Guardians of the Union or Parish to which the Workhouse belongs to receive, lodge, and maintain therein poor Persons of that Class or those Classes, or any of them, and the Guardians shall receive, lodge, and maintain such poor Persons accordingly on Terms to be agreed on, with the Approval of the Poor Law Board, by the respective Boards of Guardians of the Unions or Parishes concerned, or, in default of such Agreement, to be prescribed by the Poor Law Board by Order; and in every such Case the following Provisions shall have effect:

(1.) Every poor Person so received into the Workhouse shall, while therein, be treated in all respects in like Manner, and be subject to the same or the like Regulations and Liabilities, as the other poor Persons therein, and shall be chargeable in the first instance to the Union or to the Parish in the Workhouse whereof he is received:

(2.) The abiding of any such poor Person in such Workhouse shall in all other respects be attended with the same legal Consequences as if the Workhouse were situate within the Union or Parish from which he is sent:

(3.) Every Guardian of the Union or Parish from which such poor Person is sent may at all reasonable Times enter the Workhouse and inspect any Part thereof.

Lands.

Provisions of 5 & 6 W. 4.

51. The Provisions of the Act of the Session of the Fifth and Sixth Years of the Reign of King *William* the Fourth (Chapter Sixty-

Sixty-nine) "to facilitate the Conveyance of Workhouses and other "Property of Parishes, and of Incorporations or Unions of Parishes, "in *England* and *Wales*," relative to the Acquisition of Sites or Buildings for Workhouses, and of all Acts extending or amending the same, shall apply to Lands and Buildings required to be purchased, hired, or otherwise acquired for any of the Purposes of this Act, and shall have Effect as if Managers under this Act were Guardians, and as if an Asylum or Dispensary were a Workhouse.

c. 69. hereinnamed to apply.

52. The Lands Clauses Consolidation Act, 1845, and The Lands Clauses Consolidation Acts Amendment Act, 1860 (in this Act referred to as the Lands Clauses Acts) are hereby incorporated with this Act, and for the Purposes of this Act the Term the Promoters of the Undertaking used in those Acts shall mean Managers or Guardians desirous of purchasing Lands for Purposes of this Act; and in those Acts and this Act the Term Lands shall include any Estate, Term, Easement, Right, or Interest in, over, or affecting Lands.

Certain Parts of 8 & 9 Vict. c. 18. and 23 & 24 Vict. c. 106. incorporated.

53. So much of the Lands Clauses Acts as relates to the Purchase of Lands otherwise than by Agreement shall not be put in force except for the Purchase of Lands for the Purpose of enlarging a Workhouse, Hospital, or School existing at the passing of this Act, and then not without a previous Order of the Poor Law Board directing such Purchase.

Provisions as to compulsory Purchase of Land.

54. Before the Poor Law Board make any such Order the Managers or Guardians applying to them for the same shall publish once at least in each of Four consecutive Weeks in a daily Morning Newspaper published in the Metropolis an Advertisement stating the Object for which the Lands are proposed to be taken, and the Quantity of Lands required, and the Place where a Plan of the Lands is open for Inspection at reasonable Hours, and shall Four Weeks before the Application to the Poor Law Board serve Notices on the Owners or reputed Owners, Lessees or reputed Lessees, and Occupiers of the Lands, stating the Particulars thereof, and that the Managers or Guardians are willing to treat for Purchase thereof.

Notice of Application as to Lands.

Contributions of Unions and Parishes.

55. Sums to be contributed under this Act by Unions and Parishes shall be assessed on and contributed by them respectively in proportion to the annual rateable Value of the Property therein comprised, to be determined according to the Valuation Lists, or, where there are none, according to the latest Poor Rate for the Time being for the Union or Parish, or on such other Basis as the Poor Law Board from Time to Time direct.

Basis of Contributions.

56. The

Metropolitan Poor.

Calls for Contributions by Managers and District Boards.

56. The Managers of an Asylum under this Act, and the District Board constituted under the Poor Law Amendment Act of 1844 for the Maintenance of a District School, shall from Time to Time call on the Guardians of the Unions and Parishes forming the District for such Contributions as the Managers or District Board consider requisite for the Purposes of the Asylum or School.

Notice of Call for Contribution.

57. Notice in Writing of the Amount of every such Contribution, purporting to be signed by the Clerk or other Officer of the Managers or District Board (in a Form from Time to Time prescribed by the Poor Law Board by Order), shall Fourteen Days at least before such Contribution becomes due be delivered to the Clerk or acting Clerk of the Guardians of each Union and Parish liable to the Contribution, either by Post in a Letter addressed to him at the Office of the Union or Parish or otherwise.

Remedies for Recovery of Contributions.

58. If the Contribution is not duly paid the Managers or District Board shall (in addition to any other Remedy which any Person has for the Time being against Guardians) have the like Remedy for Recovery of the Contribution, or of so much thereof as is not paid, from the Overseers or other Officers authorized to levy Poor Rates in the several Parishes (whether comprised in a Union or not) in the District, as Guardians have for the Time being for Recovery from Overseers of Contributions of Parishes; and if the Overseers of any Parish in a Union pay any Money to the Managers or District Board on account of such Contribution they shall be entitled to Credit for such Payment in the Accounts of the Union with their Parish.

Medical In-door Relief.

Determination or Variation of Contracts with Workhouse Medical Officers.

59. In order to facilitate Provision for the Appointment, where requisite, of Resident Workhouse Medical Officers, and for better Classification and Management of the Sick Poor in a separate Hospital or Building, or in an Infirmary kept distinct from the rest of the Workhouse, the Poor Law Board may, by Order, determine, or from Time to Time vary as they think fit, any Contract with any Medical or other Workhouse Officer existing at the passing of this Act, and direct the Guardians to pay to a Medical or other Officer affected thereby such Compensation by way of increased Salary, or of an Annuity, or of a gross Sum, or otherwise, as the Poor Law Board think fit.

Houseless Poor.

Repeal of Reimbursement by Metropolitan Board.

60. Sections One and Two of The Metropolitan Houseless Poor Act, 1864, shall from and after the Twenty-ninth Day of *September* One thousand eight hundred and sixty-seven be repealed, except with respect to any Claims under that Act then outstanding, which shall be provided for as if that Act continued wholly in force.

Metropolitan

Metropolitan Common Poor Fund.

Establishment of Metropolitan Common Poor Fund.

61. There shall be a Fund, called The Metropolitan Common Poor Fund, raised according to the Provisions of this Act by Contributions from the several Unions, Parishes, and Places in the Metropolis (in this Act referred to as the Common Poor Fund).

Appointment of Receiver of Common Fund.

62. There shall be a Receiver of the Common Poor Fund (in this Act referred to as the Receiver), who shall be from Time to Time appointed by and shall be removeable by the Poor Law Board, and shall receive such Salary and give such Security (if any) as the Poor Law Board direct.

Receiver to open Account at Bank of England.

63. The Receiver shall open an Account with the Governor and Company of the Bank of *England*, intituled The Account of the Receiver of the Metropolitan Common Poor Fund for the Time being.

Assessment of Contributions to Common Fund.

64. The Poor Law Board shall from Time to Time assess on the several Unions and Parishes in the Metropolis the Amounts of their respective Contributions to the Common Poor Fund, in proportion to the annual rateable Value of the Property therein comprised, to be determined according to the Valuation Lists, or, where there are none, according to the latest Poor Rate for the Time being for the Union or Parish, or on such other Basis as the Poor Law Board from Time to Time direct.

Collection of Common Fund.

65. The Poor Law Board shall from Time to Time issue to the Guardians of each Union or Parish a Precept under the Seal of the Board requiring them to pay the Amount of their Contribution therein specified, in the Manner and within the Time therein prescribed, and the Guardians shall accordingly raise the Amount of their Contribution out of the Poor Rates of the Union or Parish, and shall pay the same into the Bank of *England* to the Credit of the Account of the Receiver; and no such Precept shall be liable to be removed into any Court of Law by Certiorari or otherwise, nor shall any Order of the Guardians, or any Rate made after the passing of this Act, be liable to question in any such Court on the Ground of its having been made wholly or partly in furtherance of any such Precept: Provided always, that the Guardians shall be entitled to have Credit in part Payment of their Contribution for the Amount which may be repayable to them out of the Common Poor Fund, under the Precept of the Poor Law Board, as herein-after mentioned, in respect of Expenditure during the preceding Half Year.

Collection of Contributions by Local Authority

66. In order to obtain Payment of the Amount of the Contribution to the Common Poor Fund payable in respect of any

where no Poor Rate.

Place where there is no Poor Rate, the Poor Law Board shall from Time to Time issue to the Masters of the Bench, Treasurer, Governors, or other Body or Persons having the chief Control or Authority there, a Precept requiring them or him to pay the Amount of Contribution therein specified, in the Manner and within the Time therein prescribed, and they or he shall pay the same accordingly.

Levying of Rate by Local Authority.

67. In every such Place the Masters of the Bench, Treasurer, Governors, or other Body or Persons, may levy on the several Persons occupying rateable Property therein the Amount of Contribution so paid by them or him by means of a Rate in the Nature of a Poor Rate, and for that Purpose may employ and remunerate Collectors, and shall have the like Powers as are for the Time being vested in Overseers for the Purposes of the making, assessing, levying, and collecting of Poor Rate.

Remedies for Recovery of Contributions.

68. If any Contribution to the Common Poor Fund required by the Poor Law Board to be paid by any Guardians, Masters of the Bench, Treasurer, Governors, or other Body or Persons, is not duly paid, the Receiver shall (in addition to any other Remedy which any Person has for the Time being against Guardians) have the like Remedy for Recovery from them or him, in the Receiver's own Name, of the Contribution, or of so much thereof as is not paid, as Guardians have for the Time being for Recovery from Overseers of Contributions of Parishes; and for that Purpose the Precept of the Poor Law Board requiring the Contribution shall be conclusive Evidence of the Amount thereof and of the Liability thereto of the Party sued.

Application of Common Fund.

69. Expenses incurred for the following Purposes after the Twenty-ninth Day of *September* One thousand eight hundred and sixty-seven shall be repaid out of the Common Poor Fund, that is to say,—

(1.) For the Maintenance of Lunatics in Asylums, registered Hospitals, and licensed Houses, and of Insane Poor in Asylums under this Act, except such Expenses as are chargeable on the County Rate:

(2.) For the Maintenance of Patients in any Asylum specially provided under this Act for Patients suffering from Fever or Smallpox:

(3.) For all Medicine and medical and surgical Appliances supplied to the Poor in receipt of Relief by Guardians under this Act or any of the Poor Law Acts:

(4.) For

(4.) For the Salaries of all Officers employed by the Guardians in and about the Relief of the Poor by the Managers of District Schools under "The Poor Law Amendment Act, 1844," and by the Managers of Asylums under this Act, and also the Salaries of the Dispensers and other Persons employed in Dispensaries under this Act, provided the Appointments of the Officers have been sanctioned by the Poor Law Board: 7 & 8 Vict. c. 101.

(5.) For Compensation to any Medical Officer of a Workhouse affected by the Determination or Variation by the Poor Law Board of a Contract respecting medical Relief in the Workhouse, or for Compensation to any Officer of a Union or Parish who may be deprived of his Office by reason of the Operation of this Act:

(6.) For Fees for Registration of Births and Deaths:

(7.) For Fees for and other Expenses of Vaccination:

(8.) For Maintenance of Pauper Children in District, Separate, Certificated, and Licensed Schools:

(9.) For Relief of destitute Persons certified by the Auditor, and Provision of temporary Wards or other Places of Reception approved by the Poor Law Board, under the Metropolitan Houseless Poor Acts of 1864 and 1865. 27 & 28 Vict. c. 116. 28 & 29 Vict. c. 34.

70. After each half-yearly Audit the Auditors shall, within such Time and in such Manner as the Poor Law Board from Time to Time direct, certify to the Poor Law Board the Amount actually expended by each Union or Parish in respect of Expenses which are to be repaid out of the Common Poor Fund; and the Poor Law Board shall, by Precept under the Seal of the Board, direct the Receiver to repay out of that Fund to the Guardians of the Unions and Parishes the several Sums so expended, and the Amount repaid shall be applied by them in aid of the Fund chargeable with the Relief of the Poor. Mode of Repayment out of Common Fund.

71. The Salaries of the Receiver and his Assistants, and all Expenses incurred by him in the Execution of this Act, shall be paid out of the Common Poor Fund. Receiver's Salary, &c.

72. The Account of the Receiver at the Bank of *England* shall be drawn on in such Manner and according to such Regulations as the Poor Law Board from Time to Time by Order direct. Drawing on Receiver's Account.

Poor Relief under Local Acts.

73. The Relief of the Poor of every Union or Parish in the Metropolis governed by a Local Act shall, from and after a Day to be Constitution of Guardians for Parishes under Local Acts.

be stated in an Order of the Poor Law Board in relation to each Union or Parish, be, notwithstanding anything in such Local Act, administered by a Board of Guardians elected according to the Poor Law Acts, and in conformity with an Order of the Poor Law Board.

Powers of new Board of Guardians.

74. The Guardians so constituted under this Act, notwithstanding anything in any Local Act, shall have the same Powers and Authorities, and shall be subject to the same Orders, Regulations, and Restrictions, as Guardians elected under the Poor Law Acts.

Transfer of Property to new Guardians.

75. The Workhouses, Goods, Effects, and Real and Personal Property belonging to a Union or Parish governed by a Local Act, and held or used for Purposes of the Relief of the Poor or of the Business of Guardians, shall by virtue of this Act be transferred to and vested in and belong to the Guardians of the Union or Parish when constituted under this Act, and shall be held and used for Purposes of such Relief and Business, and upon such other Trusts and for such other Purposes as would have been applicable to the same if this Act had not passed; and those Guardians shall pay and discharge the Debts and Liabilities lawfully incurred in and about such Relief, or otherwise due from the previous Guardians of the Union or Parish, as the same ought to have been paid and discharged by the previous Guardians if this Act had not been passed; provided that the Poor Law Board may, if they think fit, by Order, extend the Time of Payment of any such Debt for a Period not exceeding Six Months from the Date of the Order.

Continuance of existing Officers.

76. Officers and Persons appointed or acting under any such Local Act for any Purpose of the Relief of the Poor, or otherwise in the Service of the Guardians, and Superintendent Registrars of Births, Deaths, and Marriages, and Registrars of Births and Deaths, and Registrars of Marriages, shall be entitled to continue in Office after the Constitution of the new Board of Guardians under this Act to the same Extent as if this Act had not been passed; and their Service before the Constitution of that Board shall be reckoned in the Computation of any Superannuation Allowance to which they may become entitled: Provided that in case any Officer of a Union or Parish shall be deprived of his Office by reason of the Operation of this Act, the Poor Law Board may award to him such Compensation for the Loss of his Office and its Emoluments, either by way of gross Sum or by way of Annuity, as to them shall seem reasonable.

Saving for rating Powers of

77. Nothing in this Act shall deprive any Body constituted under a Local Act of any Power thereby vested in them of making

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and levying Poor Rates; and in relation to Guardians constituted under this Act every such Body shall be deemed Overseers within the Poor Law Acts as far as regards Liability to Payment of Contributions required by Guardians for Purposes of the Relief of the Poor in the Union or Parish. existing Bodies.

78. So much of Section Sixty-four of the Poor Law Amendment Act of 1844 as prevents the Union of Parishes governed by Local Acts, without Consent of the Guardians, and Section Sixty-five of that Act, are hereby repealed as far as they relate to the Metropolis. Part of Sects. 64, and 65 of 7 & 8 Vict. c. 101. repealed.

Boards of Guardians.

79. The Poor Law Board may from Time to Time nominate to be Members of a Board of Guardians of a Union or Parish in the Metropolis (whether elected under the Poor Law Acts or constituted under this Act) such Persons as they think fit from among Justices of the Peace for any County or Place resident in the Union or Parish, or from among Ratepayers resident therein and assessed to the Poor Rate therein on an annual rateable Value of not less than Forty Pounds, or partly from one and partly from the other, but so that the Number of Guardians so nominated do not, together with the *ex-officio* Guardians, ever exceed One Third of the full Number of the elected Guardians. Power to Poor Law Board to nominate additional Guardians.

Officers.

80. In case at any Time any Managers of an Asylum or Dispensary Committee under this Act, or any Board of Guardians of a Union or Parish in the Metropolis, fail, for Fourteen Days after Receipt of a Requisition of the Poor Law Board in this Behalf, to appoint (either originally or on a Vacancy) any Officer whom they are by Law required or authorized to appoint, then at any Time after the Expiration of that Period of Fourteen Days the Poor Law Board may, if they think fit, by Order, appoint a fit Person to be such Officer; and the Person so appointed shall have and perform all the same Powers, Rights, Privileges, and Duties as if the Appointment had been duly made by the Managers, Committee, or Guardians, as the Case may be. Appointment of Officers on Failure of Managers, &c.

Borrowing.

81. Where the Guardians of a Union or Parish in the Metropolis require to borrow Money for the Purposes and under the Authority of the Poor Law Acts, the Principal Sum borrowed may be any Sum not exceeding One Half of the aggregate Amount of the Rates raised for the Relief of the Poor in that Union or Parish within Three Years ending on the Twenty-fifth Day of *March* next preceding Extension of Borrowing Powers.

ceding the borrowing of the Money, anything in the said Acts to the contrary notwithstanding.

Provision for Orders of Removal and of Maintenance.

82. Nothing in this Act contained shall prevent any Board of Guardians or Churchwardens and Overseers from obtaining any Order of Removal or any Order of Maintenance in respect of any Pauper by reason of the Costs and Expenses of such Pauper being repaid out of the Common Fund.

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THE METROPOLITAN ASYLUM DISTRICT.

The Poor Law Board, in order to give effect, as far as may be, to the resolution adopted by the Board of Management at their Meeting on the 22nd of June 1867, desire to place in the hands of each Member of the Board the following suggestions by Dr. Markham, Poor Law Inspector :—

SUGGESTIONS FOR CONSIDERATION

CONCERNING

THE ERECTION OF METROPOLITAN DISTRICT SMALLPOX, FEVER, AND IMBECILE ASYLUMS.

The subjects for the immediate consideration of the committee or committees (which the Metropolitan District Board may, perhaps, consider it desirable to form) will be :—

The number of asylums required for the imbeciles;
The number of asylums required for small-pox cases;
The number of asylums required for contagious fevers;
The sites on which the asylums may be most advantageously erected; and the extent of ground required for the peculiar purposes of each asylum;
The obtaining information as to what land or buildings can be had for the purpose;
The number of persons for whom accommodation may be required in the different asylums; and the number who may be properly accommodated in each asylum.

Asylums for the Imbeciles.

As regards the construction of asylums for the imbeciles it will probably be found advisable that the Committee engaged in their construction should obtain information from and, when necessary, seek the advice and assistance of, the Commissioners of Lunacy. The experience of the Commissioners would enable them to supply valuable recommendations, both as to the form, the size, the site, and the management suitable to such establishments.*

The total *number* of insane persons who were chargeable to the poor rates in the Metropolitan District on January 1, 1866, was 6,214. Of these, 3,695 were living in County Asylums; 526 in licensed houses; 143 with their relatives; 24 in lodgings; and 1,826 in the workhouses.

On the 1st January 1867 the number of insane so chargeable was 6,591. Of these 4,391 were provided for *out* of the workhouses, and 2,201 *in* the workhouses. The increase of the number of insane persons living in workhouses, therefore, was 377 during 1867. Indeed, on the 1st January 1867 the number of insane in workhouses was greater by 658 than it was on the 1st January 1865. For the seven years ending 1865 the total increase was not more than 457, being an average increase of about 65 per annum.

This great increase of 658 insane persons in the workhouses in two years may be explained by the fact that the accommodation in the County Lunatic Asylums has not been for some time past equal to the demands made upon it.

From these figures we may estimate the number of those—*i.e.* of the imbecile class—for whom the managers of the Metropolitan Asylum District will have to find accommodation.

Subtracting the few lunatics who may be at present in workhouses, and who will have to be removed to County Asylums, and allowing for the increase of insane which has been going on for some years past, we may set down at about 2,200 the number of imbeciles living in the workhouses who will have to be provided for at the end of the present year.

In addition to these, we may calculate that there may be some 500 of the imbecile class who are at present living in, and who may be properly removed from, the County Asylums, and placed in the Metropolitan District Asylums.*

Provision also may probably be required in the District Asylums for those of the metropolitan insane, about 150 in number, who are at present "boarded out," or who are "residing with their relatives." Under the provisions of the Metropolitan Poor Bill it may be thought advisable to remove these pauper idiots and imbeciles from the custody of their friends, and bring them under the charge of the special asylums.

* Clause 30 of Metropolitan Poor Bill gives power to the Commissioners in Lunacy to depute a Commissioner to attend the Meetings of the Board of Management.

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The imbeciles, &c., therefore, for whom provision will have to be immediately provided in the asylums, may be approximately estimated as follows:—

In the Metropolitan Workhouses - - - - - - -	2,200
In the County Asylums and Registered Houses (say) - -	500
Living with their friends - - - - - - - -	150
Making a total of - - - -	2,850

[I subjoin a table (furnished me by Mr. Purdy) of the number of insane persons in the Metropolitan District during the nine past years, in order to show the constant increase of this class of indoor poor:—

METROPOLIS.

INSANE PAUPERS.

	Where maintained.						
	On 1st of January.	In County or Borough Asylums.	In Registered Hospital or Licensed Houses.	In the Workhouse.	In Lodgings or Boarded out.	Residing with Relatives.	Total.
1859	2,583	633	1,316	11	118	4,661
1860	3,028	284	1,390	13	103	4,818
1861	3,223	326	1,431	5	161	5,146
1862	3,340	409	1,467	16	146	5,378
1863	3,374	557	1,603	24	143	5,701
1864	3,518	471	1,714	2	154	5,859
1865	3,506	499	1,773	22	133	5,933
1866	3,695	526	1,826	24	143	6,214
1867	*	*	2,201	*	*	6,591

The average rate of increase during the last 7 years in the workhouse has been 73 per annum.

* The collective number on the 1st January 1867, according to Return of the General Pauperism furnished by the clerks, and who were residing *out* of the workhouse, was 4,390.]

As regards the *number of asylums* required for the accommodation of the imbeciles I would submit a few remarks.

Putting the present number of imbeciles to be provided for at (roughly speaking) about 2,800, and making due provision for their future increase, the question will naturally arise as to whether it be advisable to erect two or three asylums—whether to erect two asylums, each capable of accommodating about 1,500 inmates; or three asylums, each capable of containing about 1,000 inmates.

It may be matter of consideration, from an economical point of view, whether it would not be more advantageous to build two than three asylums. Two asylums of the size suggested would probably afford provision sufficient to meet the wants of the Metropolis for some years to come. But then, on the other hand, three smaller asylums, through their greater fitness for enlargement, would probably enable us to provide better for the future increase (which we must anticipate) of this class of insane.

Of course the asylums would in either case—whether two or three in number—be built on ground sufficient, and in such form as to admit of future enlargement.

In making the above estimate it must not, however, be forgotten that the present accommodation in the County Asylums for lunatics—*i.e.* for those requiring special treatment and attention, and for whose case it is not intended that the Metropolitan District Asylums shall provide—is far below the existing demand. Unless, therefore, additional provision be made for this class of insane, by enlargement of the County Asylums, we may anticipate that a certain number of lunatics will, of necessity, be retained in the District Asylums. Perhaps, therefore, to meet this contingency, it may be thought necessary to provide accommodation in the District Asylums somewhat beyond what may be actually required for the imbecile class only.

With regard to the *site* of these asylums, without expressing any opinion as to the necessity or expediency of their being placed in the immediate vicinity of the Metropolis, it is every way desirable that they should be built on large plots of ground, in order that the imbeciles may enjoy abundance of exercising space.

* I have not yet been able to obtain exact information on this head from the County Asylums.

Fever and Smallpox Asylums.

There are certain facts, common both to smallpox and fevers generally, which may be considered when settling the provision to be made for such diseases in the Metropolitan District Asylums.

Diseases of this nature, although constantly present in the Metropolis, are apt to occur with unusual severity at particular periods, that is to say, they are much more rife in some years than they are in others; consequently the accommodation required for patients suffering under them fluctuates considerably, or, in other words, is at one time much greater than at another.

The question may, therefore, properly be considered from an economical point of view as well as otherwise.

To provide and keep up establishments with their full complement and expensive staff, such as would be required to meet the highest number of cases of these diseases which may occur in an unusually severe epidemic year, will entail a great and, perhaps, needless expenditure. The actual provision should be based on a calculation (so far as it can be made) of the highest average number of cases of these diseases for which the Metropolitan Asylum District may have to find accommodation during ordinary epidemic periods.

It is not necessary, in my opinion, to maintain constantly prepared that excess of accommodation required in any one extraordinary year, when fever or smallpox is visiting the Metropolis with unusual epidemic severity. Such excessive demand may be readily met and provided for by extemporized arrangements. Thus, for example, iron houses, which are capable of being erected and taken down and stowed away in a few days, may be provided and kept for emergencies of the kind here spoken of. An iron house of this nature was, in fact, on a late pressing occasion, actually erected in ten days on the premises of the Fever Hospital, and was found to answer its objects in all respects. I may add that this same iron house has since been used as a cholera hospital, and during the past winter afforded excellent accommodation for the numerous cases of smallpox which occurred in the parish of Marylebone.

Since writing the above, I have asked and obtained from Dr. Murchison, the senior physician of the Fever Hospital, his opinion as to the erection of temporary wards for contagious fevers. His answer, which he permits me to use, is as follows:—

"The fever which prevails chiefly among the poor of London is essentially an epidemic "disease. The hospital accommodation which would be sufficient under ordinary cir- "cumstances would be utterly inadequate during an epidemic. A Fever Hospital ought, "therefore, in my opinion, to consist of a permanent building of 200 to 300 beds, and "be provided with the means for rapid extension on the advent of an epidemic. "This extension can at any time be rapidly effected by means of iron sheds, which "have been found eminently suited for the treatment of fever cases. The baths, "wash-houses, and offices of the permanent building ought to be on a scale suited to the "requirements of an epidemic.

"Charles Murchison."

But there are other reasons, besides those founded in economy, which render it undesirable to erect more or larger Fever or Smallpox Asylums than are absolutely required.

It must be remembered that these asylums, in order to fulfil effectually their special purposes, must be placed in situations readily accessible to the district for whose wants they provide, and, therefore, in the near vicinity of the Metropolis. It is evidently undesirable to subject persons suffering from these diseases to a longer carriage transport than is absolutely necessary. Moreover, all such persons, on recovery, have to be re-conveyed to their own homes or to the workhouses from whence they were brought.

Again, the presence of such establishments is always more or less objectionable to the inhabitants of the quarter in which they are placed; indeed, it is supposed in some degree to depreciate the property of the neighbourhood.

[Under this head, however, it may be well to note that the Metropolitan Smallpox and Fever Asylums will be far less open to objection (in the sense inferred) than Smallpox and Fever Hospitals usually are. The patients will be conveyed to the asylums in special carriages, and care will doubtless be taken that, during their residence in the asylums, they be kept strictly secluded from intercourse with the neighbourhood, and that, on recovery, they be re-conveyed to their own homes or to the workhouses in special carriages. In this way the public, and especially those living near the asylums, will be relieved from the danger or anxiety (at present complained of, and perhaps not always unjustly,) attending the conveyance to hospital of smallpox cases in public conveyances, and the return of patients from the hospitals to their homes in omnibuses, &c.

Indeed, if proper care be taken for the complete isolation of the Smallpox and Fever Asylums and of the proper conveyance of the patients to and from them, it may be safely affirmed that the presence of the asylums will in no case produce either real danger or inconvenience in the neighbourhood where they are established; that they will not, in this way, be more objectionable than ordinary hospitals are.

It would be prudent, and, indeed, only fair, that an explanation of the kind here suggested should be made in any neighbourhood where there may be an intention of erecting asylums of this kind.]

Moreover, in considering the number of asylums required for these special purposes, we must not forget the difficulty as well as the expense which attend the procuring of sites in the position and of the special character required. Each asylum should possess a largish area of ground to ensure its satisfactory isolation from surrounding dwellings. It should be placed in the less densely populated neighbourhoods, and, as far as may be, on elevated and open ground.

Again, it may be noted that at times one of the asylums—if there be two or more—may be able to supplement the want of accommodation occurring in another asylum of the same class. Thus, for example, if a sudden increase of fever or of smallpox in the northern districts occasioned pressure upon the asylum north of the Thames, the asylum south of the Thames might meet the difficulty, and *vice versâ*.

If, however, the increase of fever or smallpox occurred simultaneously on both sides of the Thames, and so as to overburden the resources of the northern and southern asylum, then it would be necessary to fall back upon the provision already proposed, viz., the temporary erection of iron houses.

Another reason might be suggested for not providing any excessive permanent accommodation for fever and smallpox, viz., that we may hopefully anticipate in the future, under improved sanitary laws and a better system of vaccination, a considerable and permanent reduction in the number of cases both of fever and of smallpox in the Metropolis

What number of smallpox or of fever cases may be wisely congregated together in one asylum need not, perhaps, be subject of discussion. It will, I believe, be found that the highest number of patients for which any one of the contemplated asylums of this kind may have to provide, at least in ordinary epidemic years, will not exceed that figure which will recommend itself as reasonable to every one.

And under this head it may be observed that the danger attending the transport of fever and smallpox patients, even from distant parts of the Metropolis, to the hospitals will be greatly lessened when the asylums come into operation. As there will then be every facility given for the admission of such patients to the asylums, no delay will occur in their removal; that is to say, they will be taken to the asylums at an early, not (as often happens at present) at an advanced stage of the diseases. Moreover, special carriages, in which the patients can be placed recumbent, will be provided, together with an attendant, and so that patients may be removed with comparatively small risk even at an advanced period of the fevers.

The danger attending the transport of fever and smallpox patients to the hospital is probably much exaggerated. The danger resides mainly in careless and improper kind of transport, and in the advanced stage of the disease at which the removal is effected. Under the due conditions of transport above mentioned, I am inclined to think that the distance to which cases of fever or smallpox may have to be taken, even if there were only one Fever and one Smallpox Hospital erected for the Metropolitan District, need not be much considered in deciding the required number of such hospitals.

Fever Asylums.

The statistics of the London Fever Hospital, together with the number of fever cases treated in workhouses, and in their own homes under parochial care, furnish us with data by which we may, with tolerable accuracy, estimate the accommodation required in the Metropolitan District Fever Asylums.

The Fever Hospital, it should be observed, has for some three years past never refused to admit a case of fever. The doors of the hospital, to the great credit of the managers, have been constantly open to all comers. Consequently, as almost all the metropolitan workhouses make free use of the hospital, we may very fairly accept the following statistics of parochial patients—*i.e.*, of patients admitted under parish orders—as an approximative test of the actual wants of the Metropolis in the matter of accommodation for fever cases.

CASES ADMITTED into the FEVER HOSPITAL under PARISH ORDERS.

	Cases of Fever, &c.
In 1856 were admitted - -	1,650 (about)
„ 1857 „ - - -	720 (about)
„ 1858 „ - - -	575 (about)
„ 1859 „ - - -	450 (about)
„ 1860 „ - - -	250 (about)
„ 1861 „ - - -	534
„ 1862 „ - - -	2,458
„ 1863 „ - - -	1,913
„ 1864 „ - - -	3,324
„ 1865 „ - - -	3,125
„ 1866 „ - - -	3,342 *

[*N.B.*—It must be observed, that in these figures are comprised the cases of supposed fever sent to the hospital by mistake. Thus, no less than 590 of the 3,577, the total number of cases admitted in 1866, were simple acute diseases, *not* fevers. But this fact in no way disturbs the deduction drawn from the figures, as indicators of the number of beds required for parochial cases of fever in the Metropolitan District. It must be anticipated that errors of this kind, being unavoidable, will occur in the future, as they have occurred in the past.]

Now in, addition to these cases of fever, &c. treated in the Fever Hospital, we have other cases which must be taken into calculation, when making provision for them in the District Asylums.

Thus, for example, we find that about 100 cases of fever were (and I may say improperly) treated in a few of the workhouses; and that about 800 cases were treated at their own homes.

Moreover, we must not forget that when the Fever Asylums are in operation, it is very probable many of the cases which are at present treated in our general hospitals will be sent to the asylums.

Consequently we may set down as follows the number of fever cases for which the Metropolitan District Board would have had to provide in 1866, premising that this year was one of the severest of late epidemic years of fever.

	No. of Cases.
Parochial cases sent to London Fever Hospital -	3,342
Cases treated in workhouses - - -	100
Cases treated at their own homes - - -	800
Cases which were treated in general hospitals, and might have been sent to the District Asylum, (say)	200
Total - - -	4,442

Now, we have here a very fair test by which to estimate the number of beds required to meet these 4,442 cases; viz., by ascertaining the number of beds actually occupied by parochial cases in the Fever Hospital.

The number of beds in that hospital is now 330, and, as above said, the hospital has never refused a case for some years past. Nevertheless, during this severest of late epidemic years (1866) the greatest number of beds in the hospital occupied at any one time during the year was not more than 289. The lowest number of patients in the hospital at one time being 107 in that year.

It should be observed that the actual number admitted during 1866 into the Fever Hospital was 3,577; the difference between 3,577 and 3,342 representing the *non-parochial* cases. Consequently, the number of fever cases actually treated in the Fever Hospital in 1866 was very nearly equal to the whole of the parochial cases which occurred in the metropolitan district.

It may, therefore, be fairly argued that, inasmuch as in the accommodation of 3,577 patients the Fever Hospital never employed more than 289 of its beds, it could with its remaining 41 unoccupied beds have met the wants of the Metropolis (even during this severest of late epidemic years) if every single parochial fever case had been sent there for treatment.

But never under any circumstances is it possible that all parish fever cases should be sent to the asylum. Some patients (and not a small number) will always refuse to quit their homes, and many (children) cannot leave their mothers.

* These figures were supplied me by Dr. Murchison, and are taken from the Annual Report of the Fever Hospital.

Perhaps, therefore, the reasonable and not unjust conclusion to be drawn from these figures is, that permanent hospital accommodation equal to that afforded by the present London Fever Hospital is sufficient for the ordinary wants of the Metropolis.

The figures above given show also the great variation in the amount of hospital accommodation required in different years, and suggest to us caution in the making of *permanent* accommodation for fever cases from calculations based on the data of any one extraordinary epidemic year.

We may anticipate, with something approaching to certainty, that what has happened in the past in reference to the epidemic rise and fall of fever will happen in the future. More than this; we may expect (from former experience) a notable diminution of fever cases in the Metropolis in the course of the next few years; or, in other words, a decline of the present epidemic.

During the years 1857, 1858, 1859, 1860, and 1861 the fever cases *at any one time* in the hospital must have been very small; indeed, we may assume that at certain periods the hospital must have been almost free of patients.

These facts, showing the temporary character of fever epidemics,—their rise and fall,—indicate that, for the sake of economy, it is advisable to extemporize the required accommodation in so far as it may be deemed extraordinary, and in so far as is consistent with the supply of a proper permanent accommodation.

It may, perhaps, be well to note that in the Fever Asylums will, of course, be received cases of scarlet fever, as well as of all those febrile diseases which, in ordinary language, pass under the common term of fever, viz., typhus fever, typhoid or enteric fever, febricula, &c.

This bringing together under one roof, or rather into one establishment, of fevers, some of which are more severe as diseases and more contagious in character than others, will naturally lead to important considerations in the matter of construction of the Fever Asylums; how, in fact, the proper isolation of these different species of fevers may be best effected.

Provision will also have to be made for the reception of doubtful cases, and of cases of ordinary acute diseases, or of simple fever attending internal inflammations, as, for example, inflammation of the lungs, &c. Numerous cases of this kind every year find their way into Fever Hospitals; indeed, during the year 1866 no less than 590 cases of acute diseases, *not fevers*, were taken to and treated in the Fever Hospital. It is evident that special provision should be made to meet and anticipate the dangers which attend the introduction of such cases into a Fever Asylum; I mean the case of those who are sent there by mistake, not suffering from any specific contagious fever, but only from some simple acute disease.

The purchase of the London Fever Hospital will no doubt be brought under the consideration of the District Board.

Doubtless, also, it will be considered whether one such Fever Asylum may not suffice for the wants of the Metropolis, at all events for the present, until a larger experience better explains the requirements of the Metropolis; or whether, again, it may not be desirable at once to erect two asylums, each capable of accommodating from about 150 to 200 patients, one north and one south of the Thames.

Smallpox Asylums.

We may obtain a tolerably accurate basis for determining the amount of accommodation required for parochial cases of smallpox occurring in the Metropolis by ascertaining:—1. The number of parochial cases which have been treated, during an epidemic year of smallpox, in the Smallpox Hospital; 2. The number of cases which have been treated during the same year in the workhouses; and 3. The number of cases which have been treated at their own homes.

Now, it appears that 2,069 patients were treated in the Smallpox Hospital during 1866; and of these probably about 1,700 were admitted under parish orders.

During the same period about 1,300 cases were attended at their own homes, and 600 were treated at the workhouses.

The number, therefore, for whom the Metropolitan District provided treatment during the past year may be roughly estimated as follows:

Cases of smallpox treated in Smallpox Hospital, say - -	1,700
Ditto treated at their own homes, say - -	1,300
Ditto treated in the workhouses, say - -	600
	3,600

[On account of the inaccuracy and deficiencies in some of the returns which have been sent in, it is not possible to give exact figures, but I believe the above represent the actual facts with sufficient accuracy for the object desired.]

We have next to estimate what number of beds are required for the accommodation in asylums of these parochial cases of smallpox.

Now, it must be observed that the figures above given represent the cases of a severe epidemic year, and that probably, therefore, the Metropolitan District Board would not consider it needful to provide at all events a greater amount of permanent accommodation than what might be required in such a year.*

Now, taking the above estimate of 3,600 parochial cases of smallpox occurring in 1866, and subtracting, say, 600 of those set down as treated at their own homes, as being cases which, for reasons, either could not or would not leave their homes and go into the asylums, we should have something like 3,000 cases to provide for in the asylums.

What amount of accommodation would be required for such a number of smallpox patients?

The Smallpox Hospital contains 104 beds, and it appears that during the pressure of 1866 it accommodated 2,069 patients; but this was a greater number, I learn from Mr. Marson, than should have been properly admitted.†

We will, therefore, set down at 1,700 the number which might have been readily and properly accommodated in the 104 beds, *i.e.*, so as to allow of a certain number of beds being always empty, and probably also of a longer residence in the hospital after recovery.

But if 104 beds suffice for 1,700 cases, it is evident that about 200 beds will provide for double that number, or, in other words, would have sufficed for the total wants of the Metropolitan Poor District, even during the severe epidemic year of 1866.

From this I conclude that two Smallpox Asylums, one situated north and one south of the Thames, each containing permanent accommodation for about 100 patients, will be found sufficient for the wants of the Metropolis.

It may, however, be matter of consideration whether one Smallpox Hospital, capable of holding about 200 beds, with the means of temporary enlargement, would not equally well serve the purposes of the Metropolis. It may be said, in favour of the single asylum, that the multiplication of hospitals of this sort is undesirable; that the nature of the disease is generally manifest at an early stage in the case of small pox, *i.e.* at a time when the patient can undergo conveyance, even to a distance, without inconvenience or danger; and that the keeping up of one large establishment is much more economical than that of keeping up two smaller asylums.

It may also be said that, if sufficient ground be provided, no danger need be anticipated from the concentration of 200 cases of smallpox in one hospital. By proper

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* I subjoin an extract from a recent report of the Smallpox Hospital, by Dr. Munk and Mr. Marson, to show the epidemic character of the visitations of smallpox, and to show also how greatly the amount of accommodation required for diseases of this kind varies from year to year. These figures of the Smallpox Hospital give us the means of estimating generally the extent of smallpox in the Metropolis during any one of the years mentioned :—

"It may be interesting if we give in a tabular form the number of patients admitted into the hospital in each year since the opening of the present building in 1850. We have bracketed the periods of epidemics, so as to mark their date and duration, and the number of patients they have each of them brought to the hospital.

1851	682	
1852	800	1,482
1853	143	
1854	714	
1855	972	2,321
1856	635	
1857	212	
1858	363	
1859	1,185	
1860	875	2,060
1861	289	
1862	417	
1863	1,537	
1864	836	
1865	1,249	5,691."
1866	2,069	

† It appears that 2,120 cubic feet are given to the bed of acute cases, and about 1,500 to convalescent cases, in this hospital.

isolation of the wards (built on the pavilion principle) such a hospital might, in fact, be so erected, as to all intents, to form as it were a number of small isolated hospitals.

Two hospitals would, doubtless, be more convenient, as places of resort for the sick, than one. But then, on the other hand, the set off, in the matter of economy, in favour of one hospital is not to be overlooked. It must not be forgotten, that two hospitals would require the maintenance of a double staff of officers, with all the other contingent expenses of a double establishment.

Besides, there is in this matter another important fact to be considered. The Board of Management will see, by reference to foregoing figures, that they are called upon both in the case of fever and of smallpox to provide accommodation at a time when these diseases are probably at a maximum of epidemic violence. They will also learn, from the same source, that for many years together these diseases are so few in number as scarcely to make any demands at all upon the resources of the hospitals. During such a period the expenses of, at all events, one of the hospitals would be superfluous. As an illustration of this, I may perhaps usefully mention the fact, that the Governors of the Fever Hospital some years ago, on account of its having no work to do,—*i. e.* when the visitation of typhus was at a very low ebb,—actually contemplated converting it into a general hospital.

The data employed for estimating the number of cases of insane (imbeciles and epileptics), of smallpox, and of fever, for which provision will have to be made in the Metropolitan Asylums will probably be found satisfactory; but the fluctuating character, the rise and fall of smallpox and of fever, not only from year to year but from month to month, renders more difficult any exact calculation as to the number of these diseases for which provision is required.

Further statistics, and all available information which the Board may require, will be furnished for the information of the managers.

21.

21.h.17(a).

METROPOLITAN
POOR-LAW MEDICAL OFFICERS' ASSOCIATION.

REPORT OF THE COMMITTEE OF COUNCIL OF THE METROPOLITAN POOR LAW MEDICAL OFFICERS' ASSOCIATION, APPOINTED TO "CONSIDER AND REPORT UPON THE 'REPORT OF DR. EDWARD SMITH, ON THE METROPOLITAN WORKHOUSE INFIRMARIES, &c.'"

"AT A MEETING OF THE COUNCIL, held at 37, Soho Square, on Tuesday, the 31st July, 1866, the Report upon 'Metropolitan Workhouse Infirmaries, &c.' by Dr. E. Smith, Poor Law Inspector and Medical Officer to the Poor Law Board, having been further considered, a Committee, consisting of the Officers of the Association, was appointed to draw up a Report upon the same, to be submitted to the Council at the following Meeting."

"AT A MEETING OF THE COUNCIL, held on Tuesday, the 7th of August, 1866, the Report of the Committee having been read, was approved, and ordered to be printed."

Extracted from the Minutes.

T. ORME DUDFIELD, M.D.,
Hon. Secretary.

Printed for the Association,
August, 1866.

John Nichols and Son, Printers, 8 & 9, Chandos Street, Strand.

682 319
TOMHS

REPORT, &c.

Preliminary.

In fulfilling the task imposed upon them by the Council, your Committee think it desirable to consider, separately, a few of the more important questions dealt with in Dr. E. Smith's Report.

Cubic and floor space.

And first with respect to the
CUBIC AND FLOOR SPACE
which should be allowed in the sick wards.

Here the first point which strikes us is the remarkable variance between Dr. Smith's opinions and those commonly accepted in the profession.

Page 48.

The Poor-Law Board having sought the opinions of the medical officers upon this vital question, a large proportion of them recommended 1,000 cubic feet and 80 feet of floor space per bed—as a minimum (the cubical space allowed in general hospitals ranges from 1,200 to 2,500 feet per bed). Dr. Smith would be contented with 500 cubic feet per bed, affirming that that amount, with proper ventilation, is sufficient to secure an atmosphere equally pure with that of general hospital wards. Here we would observe that if this remarkable proposition can be sustained, we have, at once, a simple and ready way out of the great difficulty which now besets the treatment of the sick poor; for if 500 cubic feet of space per bed were to be recognized as a sufficient allowance, the Governors of London Hospitals might plausibly insist on housing three times their present number of inmates, thus providing accommodation for a very large proportion of the many thousand sick persons who now crowd the workhouse infirmaries, of which the Poor-Law Board might avail itself under special arrangements.

Objections to Dr. Smith's experiments.

But your Committee cannot subscribe to Dr. Smith's *dictum* upon this question, and they have to offer the following objections, *in limine*, to the experiments upon which it is based.

A.—That they were essentially inexact, inasmuch as no account was taken either of the *total amount of air* passing through the wards in which the experiments were made, of the *rate of movement* either at the apertures by which fresh air entered or foul air escaped, or of the total size of ventilating apertures provided, per bed.

B.—That being thus inexact, the experiments afford no means of estimating the amount of draught which may have been created by the ventilation.

C.—That the mere fact (supposing it correctly stated) that the patients did not find the ventilation disagreeable or hurtful, is worth nothing, because the trials were made in warm weather. The same ventilation in winter would have been very different in its effects on the patients.

D.—That the class of inmates of these wards is not described. They may have been simply infirm or chronic patients, and may have borne, without serious injury, an amount of movement of air which would have been dangerous or fatal to the subjects of bronchitis, pneumonia, and kidney disease, and many other complaints which are commonly seen in workhouse wards.

E.—That the experiments took no account of the amount of *organic matter* in the air—a vital point.

F.—That they were quite inadequate in number considering that they are now put forward as subverting the universal *dicta* of scientific Europe.

G.—Finally, these experiments are the record, not of the state of average workhouse wards allowing 500 cubic feet per bed, but of selected wards where ventilation was regulated by Dr. Angus Smith's trained assistants.

However, it may be well to take Dr. Smith's own account of the results of these experiments. From this we find that the mean amount of carbonic acid in the atmosphere of the wards examined was 0,0568 per cent. by day, increasing to 0,0780 per cent. at midnight, and 0,0802 per cent. at 5 a.m., a proportion which is more than double that found, on the average, in the external air, and really represents a dangerous degree of impurity for sick wards. The state of the atmosphere of sick wards at night, is the true test by which their ventilation should be tried; an average of the condition during both day and night, which Dr. Smith takes as a standard, cannot be considered as such. Page 46.

Ample information on the above subject may be found in the scientific reports contained in the Army Medical Department's Blue Books for the last five or six years; documents which are unaccountably ignored in Dr. Smith's Report. The experiments recorded in these documents, and in the Reports of the French Commission on Hospital Ventilation, contrast strongly by their number and exactness with the observations recorded by Dr. Smith.*

From the experiments made at Aldershot, and at Netley, it can be proved, beyond question, that (with an allowance of only 500 cubic feet per bed) in order to have reduced the carbonic acid, even to the unsatisfactory standard obtained in Dr. Smith's experiments, it must have been necessary to change the whole air of the wards *four times per hour;* and we venture to affirm both from our own experience and the universal testimony of authorities that this cannot be done without creating dangerous currents, except with the help of an elaborate and most costly apparatus, and a numerous staff of assistants.

We consequently renew, with even more urgency than before the appearance of Dr. Smith's Report, our demand for 1,000 cubic feet and 80 feet of floor space per bed. Page 39.

But your Committee rejoice to observe, that although Dr. Smith maintains the sufficiency of 500 cubic feet per bed, and argues throughout as though this were to be the standard in the future as in the past, he does, by implication, recommend a much larger allowance. He indicates a pattern ward, and your Committee agree that such a ward would fairly meet the requirements of space. This ward, 60 feet in length, 20 feet in breadth, and 12 feet in height,

* See also the letters by Dr. Parkes, M. Husson, Director of the French Hospitals, General Morin, Chairman of the Imperial Commission on Ventilation, in the printed Reports of the Workhouse Infirmaries' Association, the Report of Captain Galton on the Herbert Hospital, and Miss Nightingale's Notes on Hospitals.

with windows on both sides, will, he says, allow of 20 beds (ten on either side) and afford 60 feet of superficial area to each bed.

Such a ward would, indeed, afford 60 superficial feet to each of 20 beds; if it contained nothing else, and 720 (not merely 500) cubic feet; but it is certain that 20 beds could not be placed in it if the recommendations of Dr. Smith, as to the width of the inter bed-spaces, viz., 3 feet (or 6 feet per bed, laterally including the interspace) were to be carried out (and less than this it would be very unsafe to grant). Unless, indeed, the ward should be deprived of both fire places, and of the greater portion of the furniture which Dr. Smith very properly declares to be necessary.

Page 51. Let us review this point a little more closely; and, in doing so, assume that the ward has no door-way, excepting at either end in the line of the central gangway. You may then place ten beds on the one side and allow three feet between each bed—one corner bed being placed against the wall—but there will be no room, on this side for any furniture, excepting the alternate lockers and arm chairs between the beds.

But on the other side of the ward, 60 feet in length; and supposing the tables and benches to be entirely disposed of in the seven feet gangway, you have to place 10 beds, allowing 6 feet laterally to each, in addition to two fire places (each 7 or 8 feet wide) and a variety of articles of furniture, viz., "one or two dressers with
Page 51. cupboard doors, one or two cupboards for clothes, night stools, hip and slipper baths, screens," etc., the provision of space for all of which though recommended by himself, Dr. Smith appears to have overlooked.

We may say that if there be only one dresser with cupboard doors, and only one cupboard for clothes, and if these be placed in the two corners of the second side of the ward; and if there be two fire places—and two would be required—and leaving out of the question all the other articles of furniture recommended, it would not be possible to place more than six beds on the second side of the ward.

Thus, then, instead of 20 beds, with 720 cubic feet each, there could not be more than 16 beds (according to Dr. Smith's own showing) which would allow of 900 cubic feet per bed.

It will thus be seen that there is a substantial agreement between the Medical Officers and their colleague of the Poor-Law Board as to the arrangement of beds in a ward, but that this requires twice the cubical contents which his ventilating experiments have induced him to suppose sufficient.*

We concur as to the convenience in size, shape, and general arrangements of the ward sketched by Dr. Smith; it is very near the ordinary hospital type, but we would have it six inches higher, thus—60—20—12.6 feet. This would give a total cubical space of 15,000 feet, and a total superficial area of 1,200 feet. We would place 15 beds in it; 9 on the one side, and 6 on the other, and so secure the

* We notice in some of the special reports contained in the Appendix, that Dr. Smith recommends 600 to 700 cubic feet per bed in wards to which day rooms are attached. If 500 cubic feet per bed can be made sufficient for sick wards occupied by day and by night, why allow more, seeing that the demands upon Workhouse accommodation are so urgent?

minimum we ask for, viz., 1,000 cubic feet and 80 superficial feet per bed. Fifteen beds and the requisite furniture would comfortably fill, yet without overcrowding, such a ward.

Your Committee have been thus particular and circumstantial in their treatment of this subject of cubic space, because it is insinuated in Dr. Smith's Report that the former judgment of the Poor-Law Medical Officers on this question was not formed independently, but at second hand.

We repel this insinuation and declare that the Medical Officers then spoke from their own practical knowledge, although they would have been sorry, indeed, to shut their eyes to the mass of observations on this subject, both scientific and practical, which have been made by the most eminent authorities in this and other countries.

VENTILATION.

Ventilation.

The subject of Ventilation, so intimately connected with cubic space, has been dealt with, to a considerable extent in the previous section.

But with especial reference to Dr. Smith's remarks upon this all-important question, we observe that he appears to argue as if the medical officers had only asked for larger cubic space ("which may mean only dilution of the poison,") and not for larger cubic space, *plus* the most efficient ventilation that can be obtained;—ventilation of a character to be out of the control of the inmates, constant in operation, and, if need be, with provision for warming the admitted air. This assumption is entirely gratuitous.

Page 41.

Your Committee disclaim the "indifference" and the "want of due consideration of and knowledge upon the subject," which Dr. Smith attributes to the medical officers, and refer to his own refutation of the charge in the following paragraph, wherein he admits that, "notwithstanding the defective construction and the want of knowledge referred to, various means have been devised in each workhouse to aid in the work of ventilation."

Page 20

It has struck your Committee as not a little remarkable, that Dr. Smith appears almost entirely to ignore the importance of the organic products emanating from the human body, and more especially those subtle animal poisons which, floating in the air, are the cause of the spread of contagious diseases, more particularly in sick wards, allowing small cubic and floor space.

He does, indeed, declare, that if the carbonic acid is kept down to a certain point, the other animal poisons referred to, will exist in such small amounts as may be disregarded. But your Committee venture to say that in so limited a space as 500 cubic feet per bed, it is not possible to get rid of these poisons by any system of ventilation which shall comply with the conditions necessary where sick people are lying in bed. In the best ventilated wards of workhouse infirmaries allowing this quantity of space, bad smells are invariably perceived when the windows are closed, and very often when the windows are open.

But what is the system of ventilation recommended by Dr. Smith for such a ward as we have previously described? It consists

Page 54.

of one iron air-brick, size not given, above and below for every four feet of wall space, *i. e.*, sixty apertures in the side walls (to say nothing of the end walls), each communicating directly with the open air in a ward 60 feet long, and containing twenty (or, as your Committee have shown, more properly fifteen or sixteen) beds. The ventilators are to be kept open and only modified by the use of perforated zinc on the inner side.

Page 54.

It is presumable that this, or some other, analogous system of ventilation, was adopted in the wards when Dr. Smith's experiments were conducted; and if so, we greatly doubt that it was "neither disagreeable nor hurtful to the inmates," and that it made them "feel more refreshed in the morning than before," unless, indeed, they belonged to a very different class to the ordinary inmates of infirmary wards.

Page 54.

Other modes of ventilation are described ("many of them equally effectual"), by which this particular system may be supplemented or superseded, into which your Committee cannot enter, but they dissent from the conclusion (4), that "the corridors should be the great ventilators of the building."

We do not stay now to decide upon the best mode of ventilation, but we may remark that much skill will doubtless be required to adapt different arrangements to meet the exigencies of particular wards in the existing infirmaries, of which the construction offers every kind of variety.

SYSTEM OF NURSING.

System of Nursing.

Your Committee observe with satisfaction that Dr. Smith admits the necessity of abolishing the system of pauper nursing.

There can be no doubt that the nursing to be satisfactory must be based upon the hospital system, and that paupers must be employed only as cleaners or servants. Were pauper nurses, or could they become anything but "ill-trained and unreliable," to say nothing of their age and general ignorance, they would not remain in, they would not, indeed, have become inmates of the workhouse.

Page 24.

To render the nursing efficient, it is essential to provide the nurses with adequate room-accommodation in convenient contiguity to the sick wards. There is reason to believe that the services of the present paid nurses in many workhouses, are rendered less valuable than they should be, by the distance which often separates their apartments from the sick wards. Not living close to their patients, they are too much away from them, and the temptation to neglect of duty is strong. Hence it follows that too many of their duties are discharged vicariously; and so it ever will be, until the nursing staff attached to each infirmary is large enough to do the entire actual nursing without assistance from the inmates.

Superintendent Nurse.

Page 67.

With respect to the question whether there should be a Superintendent Nurse, or whether the duties of that office should be discharged by the Matron, your Committee are of opinion that the proper work of the Matron is already sufficiently onerous without

imposing upon her a duty for which her previous education and habits do not qualify her. There should always, therefore, be a Superintendent Nurse distinct from the Matron, and she should be a person of intelligence and good education.

Number of Nurses now employed and number required. Page 56.

Another important question is the number of nurses required. At present there are about 130 nurses distributed over the forty workhouses in the Metropolitan District, of whom nearly one-half have been appointed for the first time during the last 12 months, and Dr. Smith considers that 130 more are "immediately needed," making a total of 260, or (in the proportion of two day nurses to one night nurse,) 173 day nurses and 87 night nurses, *i.e.*, about one nurse to 35 patients by day, and one to 70 by night;—supposing, which is not probable, that the nurses are equally spread over the various infirmaries in proportion to the relative number of inmates in each.

We think this number is insufficient, even if the paid nurses should devote their entire services to the care of the 6,000 actual sick; and still more so if, as we think, in common with Dr. Smith, that paid nurses should be employed at least to superintend the nursing of the aged and the chronic cases in the infirm wards.

REQUIREMENTS OF THE EXISTING WORKHOUSES.

Requirements of the existing Workhouses. Page 38.

In his "General Review and Suggestions, and under the heading, 'Construction and Alteration of Workhouses,'" Dr. Smith sums up the requirements of such of the existing workhouses as he does not, in common with other reporters, condemn to utter destruction. He says, "All that is now required is one or two infectious wards, one or two venereal wards, one or two wards for offensive cases, and one or two itch wards, for each sex. The lunatics, when numerous, might also advantageously occupy separate buildings, and a sick nursery should always be provided." And on another page he recommends convalescent wards and day rooms for the aged, nurses' rooms, kitchens and sculleries on every floor, enlarged airing grounds, &c. A formidable list of requirements indeed, and how to be supplied in many workhouses, we know not.

p.p. 37 and 40.

Your Committee now approach a delicate subject,

THE MEDICAL OFFICER.

And first, "As to duties."

The Medical Officer. As to duties. Page 60.

Dr. Smith, without adducing any evidence in support, says that, "The idea prevails too generally, that the attention of the medical officer is due to the sick only." He believes that "the medical officer does not occupy that position as sanitary officer which is indicated by the Consolidated Order, 'and which would be very useful to the Guardians.'" Again, "The medical officer should consider as in his department . . . . . nursing, diet, serving of food, classification of inmates, supply of furniture and clothing, and cubic space, and should not fail to advise the Guardians, and point out defects, on suitable opportunities." Once more, he says, "*Many* will doubt whether the medical officer has in all cases fully discharged his duty in reference to the existing defects. Some of his duties involve scientific and technical knowledge, such that no Board of Guardians could be expected to possess; as, for example,

Page 66.

ventilation, cubic space, and dietary." And then he quotes Article 207 of the Consolidated Orders, which defines the duties of the medical officers.

Page 66.

That the medical officers have not done their duty is a very serious charge, which should not have been suggested without

Page 68.

strong confirmative evidence. But what says Dr. Smith himself in another place? "I do not doubt that in many cases representations may have been made in reference to these defects, and they may not have been suitably noticed by the Guardians." And again, he further says, "It is not possible for me to know how far the medical officers have been consulted by the guardians, or with what energy they have pressed their recommendations."

It would thus appear that the medical officer to the Poor Law Board has condemned his brother medical officers without, as he admits, actually possessing any information upon the subject he is discussing. It would have been more generous, and indeed but common justice, to have assumed, until the contrary had been proved, that the medical officers had discharged their duties; that they had "pressed upon the guardians" all the changes and improvements possible; and he might have inferred, from the admitted inability of the Poor Law Board itself, to compel Boards of Guardians hitherto, to adopt the suggestions of that Board, the powerlessness of the medical officers, in too many cases, to induce the guardians to carry out recommendations involving considerable expenditure of money.

But your Committee believe that the medical officers are well acquainted with the position they should occupy as sanitary officers; and that if they do not "occupy the position which is indicated in the Consolidated Order," the fault does not rest with themselves

Had Dr. Smith's knowledge of the Boards of Guardians been more extensive, he would have known of how little avail it has been to press upon them "scientific and technical knowledge . . . . respecting ventilation, cubic space, and dietary." He would have known that it has too often happened that the most energetic and faithful of the medical officers have incurred the ill will of their respective Boards, and unmerited odium and unpopularity, by doing their duty in these respects.

Page 67.

The medical officers are censured by implication, for "permitting beds in excess of the proper number to be introduced into a sick ward," as if they had not "remonstrated with the Guardians." But when Dr. Smith urges that they should communicate with the Poor Law Board in such cases, he ignores one of the great difficulties under which they labour. By the adoption of such a course as he recommends, they would only injure themselves, perhaps irreparably, with their own Boards, without, under existing circumstances, effecting much, if any, good.

Supply of Drugs and Dispenser. Page 62.

Your Committee gladly note the concurrence of Dr. Smith, in the wish of the Medical Officers, that the Guardians should provide all the medicines and a dispenser. Could this reform be carried out, it would prove a boon of incalculable advantage to the sick poor and to the Medical Officers. We maintain that the same assistance should be extended to the District Medical Officers likewise.

We should also hail with satisfaction any means—and such might easily be found—whereby the amount of clerical work imposed upon the Medical Officer might be diminished. Desk Work.

Your Committee do not feel called upon to discuss the question of "Salary or other emoluments" which naturally forms a part of Dr. Smith's Report. However important the subject, it is one which the Medical Officers have not been accustomed to obtrude, and the Association has followed the good example of its individual members in this respect. As to Salary. Page 62.

But they do observe, with satisfaction, that the subject has forced itself upon the attention of the public, and is liberally discussed by Dr. Smith; and, above all, that the President of the Poor-Law Board has expressed his resolve to do justice to the legitimate claims of the Medical Officers in this and in other matters. It would, no doubt, be desirable that the whole subject of remuneration should be reconsidered and settled upon some principle of general application; and should the Poor-Law Board desire to obtain the views of the profession, we are glad to think that in the Association a medium is now presented well adapted for the purpose.

One wish they cannot conceal, and that is, that the question may no longer be left, practically, in the hands of the Boards of Guardians exclusively, but may be duly considered "by the Poor-Law Board which represents the public, by whom half the salary is paid." Were the whole, instead of a part of the salary paid by the "public," *i.e.*, out of the consolidated fund, they believe that the position of the Medical Officers, would be materially improved, and their power for good largely increased. Page 60.

CONCLUSION.

Conclusion.

Other subjects of considerable importance as "dietary," for example, are discussed in Dr. Smith's Report, but into these your Committee cannot now enter, their remarks having already considerably exceeded the limits originally intended.

In bringing their Report to a conclusion, they cannot refrain from an expression of deep regret, and even pain, that they should have been under the necessity of reflecting upon the fairness and sound judgment of their *confrère*, the Medical Officer to the Poor-Law Board.

They cannot, however, but feel that, while his report is, in many respects, wanting in justice to the Medical Officers as a body, they also have reason, from facts brought to their knowledge, to object to the manner in which some, at least, of his personal inspections were conducted; and the persistency, and, in some instances, the scant courtesy, with which his peculiar views as to cubic space and ventilation were pressed upon individual Medical Officers. They regret that he should have so completely ignored the extreme difficulties, disadvantages, and discouragements under which the Medical Officers have hitherto labored in carrying out their arduous and ill-requited duties.

Finding themselves, now, for the first time, openly consulted upon questions of management and hygiene, and the Poor-Law Board having manifested a disposition to open afresh those general principles which they had previously laid down as guides; by calling for the opinions of the Medical Officers, they cannot consent, without protest, to see their opinions uncourteously dismissed as of no value, because they do not agree with those of Dr. Smith.

Mr. Farnall's Report. Page 6.

They appeal, with confidence, against the unfavorable verdict he has given, without adequate knowledge of the extremely unsatisfactory nature of their position for many years past, and of the great difficulty they have experienced in carrying out the managerial powers nominally ascribed to them in the "Order" which Dr. Smith quotes, to the judgment pronounced by Mr. Farnall, in his Report which runs as follows:—"Upon the whole I am enabled with satisfaction to report to you that the Medical Officers of the Metropolitan Workhouses appear to me to do their duty, to the best of their ability; but I am obliged to add that, in many instances, their duties are very arduous, and their salaries inadequate."

In estimating the comparative value of these two verdicts, it must be remembered that Mr. Farnall speaks with several years' experience of the earnest efforts which the Medical Officers have made to effect progressive improvements in the accommodation and the treatment of the sick poor in workhouses, and of the difficulties under which they, in common with the Poor-Law Board, and himself, have labored.

(Signed)

JOSEPH ROGERS, M.D., *President.*
CHAS. ANDREWS, M.D.,
CHAS. M. FROST, } *Vice-Presidents.*
FRANCIS GODRICH, *Treasurer.*
T. ORME DUDFIELD, M.D., *Hon. Secretary.*

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